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OLJEDIREKTORATET

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F O R T R O L I G

i h.t. Beskyttelsesinstruksen,
jfr. offentlighetslovens
§..... nr.....

725.3

PL 046

STATOIL/ESSO/NORSK HYDRO

COMPLETION REPORT

WELL 15/9-11

BA 82-6041-1

21 JULI 1982

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OLJEDIREKTORATET

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REPORT RESPONSIBILITY:

BOR: M. Florvaag
UND: L. Andersson
J. M. Østby

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I GENERAL INFORMATION

GENERAL INFORMATION

1. Well data record:

- a) Well designation: 15/9-11
- b) Well classification: Appraisal
- c) Well location: 15/9-Gamma Appraisal
 - i) Country: Norway, North Sea
 - ii) Licence: PL 046
 - iii) Latitude: $58^{\circ} 24' 02.53''$ N
 - Longititude: $01^{\circ} 53' 41.79''$ E
 - iv) Seismic location: Shotpoint no. 1369
Line no. 510 - 325
 - v) Water depth: 87.5 m
- d) Rig data
 - i) Rig name: Ross Rig
 - ii) RKB-MSL: 25 m

2. Purpose of the well

The well was designed to delineate the hydrocarbon accumulation found in the Heimdal formation of the 15/9-Gamma structure, and to test possible hydrocarbons in the Triassic sandstones.

3. Results of the well

The well proved gas and condensate in Heimdal formation and verified thereby the results from the 15/9-9 well. The gas/water contact is at 2442 m RKB. No hydrocarbons were found in Triassic sandstones, but sandstones of Jurassic age proved gas and condensate. The gas/water contact is at 2825 m RKB.

Three tests are performed in this well (see VI; RFT AND TEST SUMMARY)

4. Well history:

a) General:

i) Spud date:	17th Sept. 1981
ii) Rig released:	23rd Dec. 1981
iii) Status:	Plugged and abandoned

b) Contractors:

i) Drilling platform:	Ross Rig
ii) Drilling Contractor:	Ross Drilling Co. A/S
iii) Cementing:	Dowell Schlumberger
iv) Casing:	Stavanger Casing Crew
v) Well testing:	Otis
vi) Electric logging:	Schlumberger
vii) Mud logging:	NPS (Baroid)
viii) Mud contractor:	Anchor Drilling Fluids A/S
ix) Supply boats:	Supply boat pool
x) Helicopters:	Helikopter Service A/S
xi) Rig position contractor:	Decca/Geoteam
xii) Diving:	Scandive
xiii) Conventional coring:	XL
xiv) Core analysis:	Geco
xv) Paleodating:	Robertson Research

c) Casing:

		Formation integrity test
i)	30" at 174 m	
	20" at 569 m	1.54 g/cc
	13 3/8" at 1176 m	1.77 g/cc
	9 5/8" at 2575 m	1.85 g/cc
	7" liner at 2950 m	
	TD at 2950 m	
		equiv. mud weight

d) Coring:

1) Conventional coring (description attached)

CORE NO.	INTERVAL (m)	RECOVERED (m)	REC. (%)
1	2364 - 2370	6	100
2	2370 - 2379	3	33
3	2395 - 2406	11	100
4	2406 - 2424	18	100
5	2424 - 2429	5	100
6	2430 - 2449	13	72
7	2449 - 2464	8.5	57
8	2464 - 2473	0	0
9	2473 - 2492	18.5	100
10	2492 - 2506	13.1	93.6
11	2506 - 2514	7.5	93.8

e) Sidewall cores: 90 were shot. 76 were recovered (See sidewall core description attached).

f. Mud Logging

1) The NPS ADT unit included the following data:

- i) Drilling rate (ROP)
- ii) Lithology
- iii) Cutting gas
- iv) Mud gas
- v) Chromatograph
- vi) H₂S detector
- vii) Shale density and approx. 20 other parameters

g) Electrical Logging:

Type of log	Run no.	Interval (m KB)
ISF/BHC-GR	1	174 - 463.5
	2	350 - 582
	3	569 - 1174
	4	1159 - 2442
	5	2340 - 2580
	6	2575 - 2848
	7	2800 - 2946
FDC-GR	1	569 - 1175
FDC/CNL-GR	2	1159 - 2581
	3	2575 - 2849.5
	4	2785 - 2947.5
DLL/MSFL/GR/SP	1	2340 - 2540
	2	2575 - 2849.5
HDT	1	2100 - 2575
	2	2575 - 2849.5
GEODIP	1	2340 - 2540
	2	2775 - 2850
CONT.DIPMETER, ARROW PLOT	1	2088 - 2573
	2	2576 - 2855
RFT	1	2349 - 2517
	2	2790 - 2938
CST	1	2170.5 - 2526
	2	2610 - 2943
CBL-GR	1	450 - 1145
CBL/VDL-GR	1	900 - 2574.5
	2	2490 - 2909.5

h) Velocity Survey:

The velocity survey was conducted by SSL.

17 checkshots with levels from 685 m - 2850 m KB

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II GEOLOGICAL REPORT

GEOLOGICAL REPORT

1. Stratigraphy

a) Table of Chronostratigraphy (all depths in meters)

CHRONOSTRATIGRAPHIC TOPS DEPTHS (KB) DEPTHS (MSL)

QUATERNARY

Holocene/ Pleistocene	112.5	(- 87.5)
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TERTIARY

Pliocene	528	(- 503)
Miocene	791	(- 766)
Oligocene	1311	(- 1286)
Eocene	1720	(- 1695)
Paleocene	2180	(- 2155)
Danian	2507.5	(- 2482.5)

CRETACEOUS

Late Maastrichtian	2527.5	(- 2502.5)
Maastrichtian	2532	(- 2507)
Early Maastrichtian ? - Campanian	2571	(- 2546)
Santonian	2604	(- 2579)
Coniacian - Turonian	2625	(- 2600)
Turonian	2691	(- 2666)
Barremian - Neocomian	2745	(- 2720)

JURASSIC

Kimmeridgian	2752	(- 2727)
Early Kimmeridgian - Oxfordian	2760	(- 2735)
Early Oxfordian - Callovian	2782	(- 2757)

TRIASSIC

	2831	(- 2806)
TD	2950	(- 2925)

b) Table of Lithostratigraphy (all depths in meters)

LITHOSTRATIGRAPHIC TOPS	DEPTH (KB)	DEPTH (MSL)	THICKNESS
NORLAND GROUP	112.5	(- 87.5)	1198.5
Utsira Formation	825	(- 800)	274
HORDALAND GROUP	1311	(- 1286)	869
ROGALAND GROUP	2180	(- 2155)	350
Balder Formation	2180	(- 2155)	50
Sele Formation	2230	(- 2205)	78
Lista Formation	2308	(- 2283)	79
Heimdal Formation	2387	(- 2362)	118
Maureen Formation	2505	(- 2480)	25
CHALK GROUP	2530	(- 2505)	175
Ekofisk Formation	2530	(- 2505)	27
Tor Formation	2657	(- 2532)	67
Hod Formation	2624	(- 2599)	50
Plenus Marl Formation	2674	(- 2649)	26
Hidra Formation	2700	(- 2675)	5
CROMER KNOLL GROUP	2705	(- 2680)	47
Rødby Formation	2705	(- 2680)	13
Sola Formation	2718	(- 2693)	7
Valhall Formation	2725	(- 2700)	27
HUMBER GROUP	2752	(- 2727)	43
Kimmeridge Clay Fm.	2752	(- 2727)	24
Heather Fm.	2776	(- 2751)	19
"Jurassic Sand"	2795	(- 2770)	35
TRIASSIC	2830	(- 2805)	120 +
TD	2950	(- 2925)	

2. LITHOLOGICAL DESCRIPTION

a) General information:

Period } are partly based on log interpretation/
Epoch } correlation and partly on biostratigraphic data.
Age }

Lithology: Description based on the samples and core description from the wellsite geologist.

Depositional environment: Based partly on earlier regional interpretation and partly on biostratigraphic data and core analysis.

b) Summary:

NORDLAND GROUP (112.5 - 1311 m KB)

The Nordland Group consists of interbedded sand and clay down to the top of the Utsira Formation (825 m KB). Sand dominates in the top of this sequence while clay is the major constituent in the lower part. The sand is fine to coarse, occasionally very coarse, angular to rounded. The clay is light grey to dark grey, light greenish grey, micromicaceous, non to slightly calcareous, soft and sticky. Various rock fragments are observed in the upper part, while trace amounts of pyrite, glauconite, lignite and shell fragments are common throughout the section. A light grey to light greenish grey siltstone is present in the lower part of this interval. It is soft and slightly calcareous to calcareous. Below the Utsira Formation (1099 m KB), the lithology is composed mainly of claystone with some stringers of siltstone and limestone. The claystone is medium to brownish grey, soft to firm, silty, micromicaceous and non to slightly calcareous. The siltstone is light to medium grey, brownish grey, friable to hard with calcareous cement. The limestone stringers consists of a light grey,

hard to very hard, microcrystalline, dolomitic, slightly argillaceous limestone. Traces of mica, pyrite, glauconite and shell fragments are seen throughout the section.

Utsira Formation (825 - 1099 m KB)

The Utsira Formation consists of sand with some stringers of siltstone and clay. The sand is composed of clear, very fine to coarse quartz grains, which are angular to rounded, moderately to well sorted. The sand also contains some mica. The siltstone is light grey, brownish grey, loose to friable, occasionally with calcareous cement. The clay is light grey, soft, silty and slightly calcareous. Traces of shell fragments, foraminiferas, lignite, glauconite and rock fragments are also reported.

Depositional environment: Marine; inner to outer shelf, the Utsira Formation indicates inner shelf environment.

HORDALAND GROUP (1311 - 2180 m KB)

The Hordaland Group is composed of claystone with stringers of siltstone, limestone and dolomite. The claystone has various shades of brown and grey, except in Early Eocene where a greenish grey to green variety is observed, furthermore, the claystone is micromicaceous, silty in parts, non calcareous to calcareous and occasionally sticky. The limestone is light brown to brownish white or white coloured, firm to hard, micritic, microcrystalline to crystalline and occasionally argillaceous. Stringers of light reddish white, firm to hard, slightly micritic dolomite are also observed in this section. Trace amounts of a light grey, bluish grey tuff with dark speckles is present in the lowermost part of the section. It is soft to firm and mottled. Traces of pyrite, glauconite, fragments of fossils and foramineferas are also present.

Depositional environment: Marine, inner and outer shelf to upper bathyal.

ROGALAND GROUP (2180 - 2530 m KB)

Balder Formation (2180 - 2230 m KB)

The Balder Formation consists of claystone/shale with tuff and stringers of limestone. The shale is varicoloured, firm to moderately hard, silty in parts and non calcareous to calcareous. The limestone is white - greyish white, moderately hard and occasionally micritic, while the tuff is as described for the Hordaland Group.

Depositional environment: Marine; outer shelf to upper bathyal.

Sele Formation (2230 - 2308 m KB)

The Sele Formation consists of the same type of claystone/shale as described for the Balder Formation with traces of limestone and pyrite. This limestone is white to light grey, occasionally brown, firm to hard and microcrystalline to crystalline.

Depositional environment: Marine; outer shelf to upper bathyal.

Lista Formation (2308 - 2387 m KB)

The Lista Formation is composed of claystone/shale and limestone as described for the Balder and the Sele Formations, plus sandstone. The sandstone consists of clear quartz grains, which are very fine to fine, occasionally medium, subangular to subrounded. It has silica cement and also occasional calcareous cement, occasionally micromicaceous and glauconitic and is hard to very hard.

Depositional environment: Marine; outer shelf to upper bathyal.

Heimdal Formation (2387 - 2505 m KB)

The Heimdal Formation consists mainly of sandstone with some layers of shale. The sandstone has the same properties as described for the Lista Formation, except that it less silica cemented. The shale is medium grey, bluish to greenish grey, firm to moderately hard, non calcareous and occasionally silty and pyritic.

Depositional environment: Marine; outer shelf to upper bathyal.

Maureen Formation (2505 - 2530 m KB)

The Maureen Formation is composed of sandstone with shale layers plus limestone in the bottom of the sequence. The sandstone is clear to white, very fine to medium grained, subangular to subrounded, friable to hard, fair to good sorting, calcareous to very calcareous and slightly glauconitic and micaceous. The shale is light to medium grey, bluish grey or medium to dark brown, firm to moderately hard, micromicaceous, non to slightly calcareous and occasionally glauconitic and pyritic. The limestone is white to yellowish white, moderately hard to hard, occasionally hard.

Depositional environment: Marine; outer shelf.

CHALK GROUP (2530 - 2705 m KB)

Ekofisk Formation (2530 - 2557 m KB)

The Ekofisk Formation consists of a white to yellowish white, moderately hard to hard, occasionally firm limestone.

Depositional environment: Marine; inner to outer shelf.

Tor Formation (2557 - 2624 m KB)

The Tor Formation consists of limestone/chalk and marl. The limestone/marl is white, yellowish to light brownish white, soft to firm, occasionally moderately hard to hard and slightly argillaceous. The marl is pink and soft to firm.

Depositional environment: Marine; inner to outer shelf.

Hod Formation (2624 - 2674 m KB)

The Hod Formation is made up of limestone/chalk as described for the Tor Formation.

Depositional environment: Marine; outer shelf.

Plenus Marl Formation (2674 - 2700 m KB)

The Plenus Marl Formation is composed of interbedded limestone, marl and shale. The limestone is light grey, white or pink, firm to hard, slightly to very argillaceous and glauconitic. When light grey the limestone grades into marl. The marl is light to medium grey firm and glauconitic. Finally, the shale is rust brown and dark greenish grey, firm to hard, micromicaceous, occasionally silty with various amounts of calcareous material.

Depositional environment: Marine; outer shelf.

Hidra Formation (2700 - 2705 m KB)

The Hidra Formation consists of interbedded limestone, marl and shale as described for the Plenus Marl Formation.

Depositional environment: Marine; outer shelf.

CROMER KNOLL GROUP (2705 - 2752 m KB)

Rødby Formation (2705 - 2718 m KB)

The Rødby Formation is composed of interbedded limestone, marl and shale. The limestone is the same type as described for the Plenus Marl Formation. The shale is rust brown, firm, micromicaceous and very calcareous. The marl is light to medium grey, firm, silty, locally glauconitic and occasionally grading into limestone.

Depositional environment: Marine; shallow, inner shelf.

Sola Formation (2718 - 2725 m KB)

The Sola Formation consists of interbedded limestone, marl and shale as described for the Rødby Formation.

Depositional environment: Marine; shallow inner, shelf.

Valhall Formation (2725 - 2752 m KB)

The Valhall Formation consists of interbedded limestone, marl and shale. The limestone and marl are as described for the Rødby Formation. The shale is rust brown, medium to dark grey, silty, subfissile to fissile, very calcareous and grades into marl. Traces of a clear, very fine to medium grained, rounded sandstone is also observed.

HUMBER GROUP (2752 - 2795 m KB)

Kimmeridge Clay Formation (2752 - 2776 m KB)

The Kimmeridge Clay Formation is composed of shale/claystone with some stringers of limestone. The shale/claystone is medium to dark grey, subfissile to fissile, silty to very

silty, firm and non to slightly calcareous. The limestone is as described for the Rødby Formation.

Depositional environment: Marine; inner shelf.

Heather Formation (2776 - 2795 m KB)

The Heather Formation consists of shale with limestone stringers. The shale is dark greenish grey, firm to hard, very silty, non calcareous and carbonaceous. The limestone stringers are white to light pink, firm to hard and occasionally slightly argillaceous.

Depositional environment: Marine; inner shelf.

"Jurassic sand" (2795 - 2830 m KB)

"The Jurassic sand" is composed of clear quartz, fine to medium grained, occasionally coarse, subangular to rounded, loose to hard, poor to well sorted and slightly calcareous and pyritic. Traces of glauconite and coal have also been observed.

Depositional environment: Marine; marginal marine to inner shelf.

Triassic (2830 - 2950+ m KB)

The Triassic consists of interbedded shale and claystone with limestone stringers and one bed of sand. The shale is medium to dark grey, occasionally greenish grey, firm, non to slightly calcareous, silty and carbonaceous in the upper part, while the claystone/shale further down in the section turns to a reddish brown colour. The sandstone bed is composed of clear quartz, fine to medium grained, occasionally coarse, subangular to subrounded, loose and

moderately to well sorted. Finally the limestone is white to light pink, occasionally light yellowish brown, firm to hard, slightly argillaceous and glauconitic. Trace amounts of pyrite and coal are also reported.

Depositional environment: Terrestrial, lacustrine/
fluvial.

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: O.V. Greiner Date: 21.09.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
180	80	Sd, clr qtz, occ mlky wh, occ pnkish, f-v	
		crs, p-mod srtd, subrnd-ang	
	20	Rock frags, m-pebbles, hd-v hd, varicol,	
		chert, gneiss, granite, Sh	
	Tr	Pyr, Glauc, Shell frags, foss	
190		a/a	
200		a/a	
210		a/a	
220		a/a	
230	50	Sd, a/a	
	50	Rock frags, a/a	
	Tr	Lign, else a/a	
240	90	Sd, a/a	
	10	Rock frags, a/a	
	Tr	a/a	
250	80	Sd, a/a	
	20	Rock frags, a/a	
	Tr	No lign, else a/a	
260	80	Sd, f-med, occ crs-v crs, else a/a	
	20	Rock frags, a/a	
	Tr	a/a	
270	90	Sd, a/a	
	10	Rock frags, a/a	
	Tr	Clyst, lt gy-lt grnish gy, sft, stky, slty	
		sl calc	
	Tr	a/a	
280	70	Sd, a/a	
	20	Lign, fibrous, sft-hd, wood frags	
	10	Rock frags, a/a	
	Tr	a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: O.V. Greiner Date: 21.09.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
290	80	Lign, dk brn-blk, fibrous, wood frags? sft-frm,	
	10	Sd, vfn-med, occ crs, clr qtz, occ mlky wh, occ pnkish, subang-w rnd, mod srted	
	10	Cly, lt gy-lt grnish gy, slty, micromicac, non-sl calc, sft, stky	
	Tr	Pyr, glauc, shell frags, foss, rock frags med, varicol, v hd	
300	50	Cly, a/a	
	50	Sd, a/a	
	Tr	Rock frags, a/a, pyr, shell frags, foss	
	Tr	Lign, a/a	
310		a/a	
320	80	Cly, a/a	
	- 20	Sd, a/a	
	Tr	No rock frags else a/a	
330	60	Cly, a/a	
	25	Sd, a/a	
	10	Shell frags	
	5	Lign, a/a	
	Tr	a/a	
340	100	Cly, lt gy, sl slty, sl calc, sft, stky	
	Tr	Pyr, Sd, vfn, a/a, shell frags	
350	100	Cly, a/a	
	Tr	No Sd, else a/a	
360		a/a	
370		a/a	
380	90	Cly, a/a	
	10	Sd, a/a	
	Tr	Pyr, glauc, shell frags, foss	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: O.V. Greiner Date: 22.09.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
390	90	Cly, lt gy, sl slty, sl calc, sft, stky	
	10	Sd, vfn-f, clr qtz, occ mlky wh, subang-subrnd	
	Tr	Pyr, glauc, shell frags, foss, lign, brn-blk, frm	
400		a/a	
410		a/a	
420	100	Cly, lt-med gy, v stky, else a/a	
430	90	Cly, a/a	
	10	Sd, a/a	
	Tr	a/a	
440	100	Cly, a/a	
450		a/a	
460	100	Cly, lt gy, sft, slty, calc, sft, sl stky	
	Tr	a/a	
470	100	Cly, a/a	
	Tr	Glauc, lign a/a	
480		a/a	
490		a/a	
500		a/a	
510		a/a	
520	100	Cly, a/a	
	Tr	Sd, a/a, pyr, glauc, foss, lign	
530	50	Cly, stky, else a/a	
	50	Sltst, lt grnish gy-lt gy, sft	
	Tr	Sd, a/a, pyr, glauc, foss, shell frags	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: O.V. Greiner Date: 23.09.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows & Remarks
540	50	Cly, lt gy-lt brnish gy, slty, sft, sl stky, sl calc	
	50	Sltst, lt gy-lt grnish gy, sft, sl calc-calc	
	Tr	Pyr, glauc, shell frags, foss	
	Tr	Sd, vfn-med, clr qtz, subang-subrnd, lse	
550		a/a	
560	80	Sltst, a/a	
	20	Cly, a/a	
	Tr	a/a	
570	100	Sltst, a/a	
	Tr	a/a, Cly, a/a	
580		a/a	
590	50	Cly, lt gy-lt brnish gy, sft, sl calc, slty	
	30	Sltst, fri-lse, else a/a	
	20	Sd, vf-med, clr qtz, subang-rnd, lse, occ w/rd needle inclusions	
	Tr	Pyr, glauc, pyritized coal frags, foss frags	
	Tr	Mica (biotite) rock frags	
600	60	Cly, a/a	
	20	Sltst, a/a	
	20	Sd, subrnd-rnd, else a/a	
	Tr	a/a	
610	70	Cly a/a	
	30	Sd, a/a	
	Tr	Pyr, Foss frags, rock frags	
620	70	Cly, lt-med gy, sft, calc, slty, soluble	
	30	Sd, a/a	
	Tr	a/a	
630	90	Cly, a/a	
	10	Sd, a/a, pred f	
	Tr	a/a	
640	90	Cly, a/a	
	10	Sd, a/a	
	Tr	Pyr, foss frags, lign, glauc, rock frags	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 17 1/2" Geologist: T.G. Gloppen Date: 29.09.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
650	90	Cly, lt-med gy, sft, calc, slty, soluble	
	10	Sd, vf-med, clr qtz, subang-rnd, lse, occ w/rd needle inclusions	
	Tr	Pyr, foss frags, lign, glauc, rock frags	
660	70	Cly, a/a	
	30	Sd, a/a	
	Tr	a/a	
670	70	Cly, a/a	
	30	Sd, occ mlky qtz, else a/a	
	Tr	a/a	
680	80	Cly, lt-med gy, sft, occ dk gy, frm, calc, slty soluble	
	20	Sd, clr, occ mlky qtz, vf-med, occ crs, subang-rnd, lse, mod srt	
	Tr	a/a	
690	90	Cly, a/a	
	10	Sd, a/a	
	Tr	a/a	
700		a/a	
710	100	Cly, a/a	
	Tr	Sd, a/a	
	Tr	a/a	
720		a/a	
730	100	Cly, a/a	
	Tr	Sd, ang-subrnd, else a/a	
	Tr	Pyr, foss frags, lign, rock frags	
740	100	Cly, sl calc-calc, sl slty, else a/a	
	Tr	Sd, vf-f, else a/a	
	Tr	a/a	
750	100	Cly, a/a	
	Tr	Pyr, pyritized foss, lign, rock frags	
760	100	Cly, a/a	
	Tr	a/a, no rock frags	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 17½" Geologist: T.G. Gloppen Date: 29.09.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
770	100	Cly, lt-med gy, sft, occ dk gy, frm, slty soluble, sl calc, Tr Pyr, pyritized foss, lign,	
780	100	Cly, sl soluble, v sl calc, else a/a Tr Pyr, foss frags	
790	100	Cly, a/a Tr Foss frags	
800	100	Cly, lt-med gry, sft, occ med-dk gy, frm, v sl calc, v sl soluble Tr Foss Frags, pyr	
810		a/a	
820	100	Cly, a/a Tr Pyr, foss frags, lign	
830	100	Sd, clr qtz, vf-f, ang-subrnd, w srted, micac lse Tr Glauc, pyr, foss frags abnd	
840		a/a	
850		a/a	
860	90 10	Sd, a/a Shell frags, forams, crushed vc size class, ribbed, concentric & radial, porous shells	
870	60 40	Sd, f-crs, mod srted, else a/a Foss frags	
880	50 50	Sd, a/a Foss frags	
890	60 40	Sd, a/a Foss frags,	
900	60 40	Sd, sl slty, else a/a Foss frags,	
910	60 40	Sd, subang-rnd, else a/a Foss frags,	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 17½" Geologist: T.G. Gloppen Date: 29.09.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
920	60	Sd, clr qtz, f-crs, subang-rnd, w srted, micac lse	No shows
	40	Foss frags, forams, shell frags, vs class size concentric and radial ribs, occ porous	
	Tr	Lign	
930	60	Sd, a/a	
	40	Foss frags, a/a	
	Tr	Lign, glauc	
940	60	Sd, Mod srted else a/a	
	40	Foss frags	
	Tr	Lign, glauc, rock frags	
950		a/a	
960	70	Sd, a/a	
	30	Foss frags, a/a	
	Tr	a/a	
970	70	Sd, a/a	
	20	Foss frags, a/a	
	10	Sltst, med gy-brnish gy, lse-fri	
	Tr	a/a	
980	70	Sd, a/a	
	10	Foss frags, a/a	
	10	Sltst, a/a	
	10	Cly, lt gy, sft, calc, slty, soluble	
	Tr	a/a + minor pyr	
990	80	Sd, a/a	
	10	Foss frags, a/a	
	10	Sltst, a/a	
	Tr	Lign, glauc, pyr, mica, minor rock frags	
1000	90	Sd, a/a	
	10	Foss frags, a/a	
	Tr	Sltst, a/a	
	Tr	Cly, a/a	
	Tr	a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 17½" Geologist: T.G. Gloppen Date: 30.09.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
1010	90	Sd, clr qtz, f-crs, subang-rnd, mod srted	
	10	Foss frags, forams, shell frags, vc class size, concentric and radial ribs, occ porous	
	Tr	Sltst, med gy-brnish gy, lse-fri	
	Tr	Lign, glauc, pyr, muscovite, biotite, chlorite, rock frags	
1020	90	Sd, a/a	
	10	Foss frags, a/a	
	Tr	a/a	
1030	80	Sd, a/a	
	20	Foss frags, a/a	
	Tr	Lign, glauc, pyr, mica, rock frags	
	Tr	Sltst, a/a, occ lt gy, hd, calc cmt	
1040	70	Sd, a /a	
	20	Foss frags, a/a	
	10	Sltst, a/a	
	Tr	a/a	
1050	60	Sd, a/a	
	20	Cly, lt gy, sft, sl calc, slty, soluble	
	10	Foss frags, a/a	
	10	Sltst, a/a	
	Tr	a/a	
1060	80	Sd, a/a	
	10	Foss frags, a/a	
	10	Cly, a/a	
	Tr	Sltst, a/a	
	Tr	a/a	
1070	70	Sd, a/a	
	20	Cly, a/a	
	10	Foss frags, a/a	
	Tr	Sltst, a/a	
	Tr	a/a	
1080	90	Sd, a/a	
	10	Foss frags, a/a	
	Tr	Sltst, a/a	
	Tr	a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 17½" Geologist: T.G. Gloppen Date: 30.09.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
1090	50	Sd, clr qtz, f-crs, subang-rnd, mod srted	
	40	Sltst, lt gry-wh, hd-frm, calc cmt	
	10	Lign w/woody texture	
	Tr	Foss frags, forams, shell frags, vc class size, concentric and radial ribs, occ porous	
	Tr	Glauc, pyr, mica	
1100	70	Sltst, a/a	
	20	Sd, a/a	
	10	Lign, a/a	
	Tr	a/a	
1110	80	Sltst, lt gry-wh, occ med-dk gry, occ brnish gry, hd-frm, calc cmt	
	20	Sd, clr qtz, vf-crs, subang-rnd, mod-pr srted	
	Abnd	Foss frags	
	Tr	Pyr, glauc, lign, abnd muscovite	
1120	80	Sltst, glauconitic, else a/a	
	20	Sd, a/a	
	Tr	a/a	
1130	90	Clyst, med gy, frm, occ sft, slty, micromic, non-sl calc, soluble	
	10	Sltst, a/a	
	Tr	Sd, a/a	
	Tr	Pyr, glauc, mica, foss frags	
1140	100	Clyst, med gy, occ lt gy, occ brnish gy, sft-frm, slty, micromic, non-sl calc, soluble	
	Tr	Sltst, a/a	
	Tr	Mica, foss frags, glauc (abnd), pyr	
1150	100	Clyst, a/a	
	Tr	Sltst, a/a	
	Tr	Lst, lt gry, hd-v hd, microxln, dollic, sl argil	
	Tr	Pyr, glauc, foss frags	
1160		a/a	
1170	100	Clyst, brnish gry-med gry, calc-sl calc, else a/a	
	Tr	Sltst, a/a	
	Tr	Lst, a/a	
	Tr	Pyr, glauc, foss frags	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 03.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
1176	100	Clyst, brnish gry-med gry, sft-frm, slty, micromic, calc-sl calc, soluble	
	Tr	Sltst, lt gry-wh, occ med-dk gry, occ brnish gry, hd-frm, calc cmt, glauconitic	
	Tr	Lst, lt gry, hd-v hd, microxln, dolie, sl argil	
	Tr	Pyr, glauc, foss frags	
	Tr	Lignitic wood	
1180	100	Clyst, brnish gry-med gry, sft-frm, slty, micromic, occ subfiss, non-sl calc	
1190		a/a	
1200	100	Clyst, a/a	
	Tr	Forams	
1210	100	Clyst, a/a, occ blk	
	Tr	Lst, gryish wh, mod hd	
	Tr	Glauc	
1220	100	Clyst, a/a, occ blk	
	Tr	Lst, a/a	
	Tr	Glauc, foss frags	
1230	100	Clyst, a/a, occ blk	
	Tr	Lst, a/a	
	Tr	Glauc, foss frags	
1240	100	Clyst, brnish, gry-med gry, sft-frm, slty micromic, occ subfiss, sl calc, occ blk	
	Tr	Lst, a/a	
	Tr	Glauc, foss frags	
1250	100	Clyst, dk-med brn, brnish gry-gry, sl calc-calc, else a/a	
	Tr	Lst, a/a	
	Tr	Glauc, foss frags	
1260	100	Clyst, a/a	
	Tr	Lst, a/a	
	Tr	Glauc, foss frags	
1270	100	Clyst, a/a	
	Tr	Sltst, lt gry, lse, non calc	
	Tr	Glauc, foss frags	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 03-04.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
1280	100	Clyst, dk-med brn, brnish gry-gry, sft-frm, slty, micromic, occ subfiss, sl calc occ blk	
	Tr	Sltst, lt gry, lse, non calc	
	Tr	Glauc, foss frags	
1290	100	Clyst, glauconitic else a/a	
	Tr	Sltst, a/a	
	Tr	Glauc, foss frags	
1300	100	Clyst, blk-subfiss, calc, else a/a	
	Tr	Lst, gryish wh, mod hd	
	Tr	Sltst, a/a	
	Tr	Glauc, foss frags	
1310	100	Clyst, a/a	
	Tr	Sltst, a/a	
	Tr	Glauc, foss frags	
1320		a/a	
1330		a/a	
1340	100	Clyst, a/a	
	Tr	Sltst, a/a	
	Tr	Glauc, foss frags	
	Tr	Lst, lt brn, frm, sl argil	
1350	80	Clyst, a/a	
	20	Lst, lt-med brn, dk brn, frm-hd, occ microxln, occ sl argil	
	Tr	Sltst, a/a	
	Tr	Glauc, pyr, foss frags	
1360	85	Clyst, a/a	
	15	Lst, a/a	
	Tr	Glauc, pyr, foss frags	
1370	90	Clyst, a/a	
	10	Lst, a/a	
	Tr	Glauc, pyr, foss frags	
1380	95	Clyst, v slty in parts, else a/a	
	5	Lst, a/a	
	Tr	Glauc, pyr, foss frags	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 04.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
1390	90	Clyst, dk-med brn, brnish gry-gry, sft-frm, v slty ip., micromic, blk-subfiss, calc, glauconitic	
	10	Sltst, lt brn, sft, non calc	
	Tr	Glauc, foss frags	
1400	100	Clyst, med-dk brn, sft-frm, slty-v slty in parts, micromic, sl calc, soluble	
	Tr	Glauc, foss frags	
1410		a/a	
1420	100	Clyst, a/a	
	Tr	Lst, lt brn, sft, sl argil	
	Tr	Glauc, foss frags	
1430	100	Clyst, a/a	
	Tr	Lst, brnish wh, hd, microxln	
	Tr	Glauc, forams, foss frags	
1440	100	Clyst, a/a	
	Abun	Glauc	
	Tr	Foss frags	
1450	100	Clyst, a/a	
	Tr	Lst, a/a	
	Abun	Glauc	
	Tr	Foss frags	
1460		a/a	
1470	90	Clyst, a/a, v slty	
	10	Lst, gryish wh, micritic, mod hd	
	Tr	Glauc, foss frags	
1480		a/a	
1490	85	Clyst, med-dk brn, brnish gry, else a/a	
	15	Lst, a/a	
	Abun	Foss frags, forams	
	Tr	Pyr, glauc	
1500	90	Clyst, a/a	
	10	Lst, a/a	
	Tr	Forams, foss frags, pyr, glauc	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 04.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
1510	90	Clyst, brnish gry-med gry, frm, slty occ v slty, micromic, non calc	
	10	Lst, brnish wh, lt gry, hd, microxln	
	Tr	Forams, foss frags, glauc, pyr	
1520	95	Clyst, med gry, occ brnish gry, else a/a	
	5	Lst, a/a	
	Tr	Foss frags, glauc, pyr	
1530	100	Clyst, a/a	
	Tr	Lst, a/a	
	Tr	Foss frags, glauc, pyr	
1540	85	Clyst, med gry, occ brnish gry, occ lt gry frm, slty occ v slty, micromic, sl calc	
	15	Lst, a/a	
	Abun	Foss frags	
	Tr	Pyr, glauc	
1550	100	Clyst, a/a	
	Tr	Lst, a/a	
	Tr	Glauc, pyr	
	Abun	Foss frags	
1560	80	Clyst, mostly med gry, else a/a	
	20	Lst, wh-crmy, brnish wh, lt gry, hd, microxln	
	Tr	Glauc, pyr, foss frags	
1570	90	Clyst, a/a	
	10	Lst, a/a	
	Tr	Glauc, pyr, forams, foss frags	
1580	95	Clyst, med gry, frm, micromic, subfiss, slty-v slty, calc	
	5	Lst, wh, frm-mod hd, micritic	
	Tr	Pyr, glauc	
1590		a/a	
1600	100	Clyst, med gry, brnish gry, else a/a	
	Tr	Lst, a/a	
	Tr	Pyr, glauc, forams, foss frags	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 04-05.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
1610	100	Clyst, med gry, brnish gry, frm, micromic, subfiss, slty-v slty, calc	
	Tr	Lst, wh, frm-mod hd, micritic	
	Tr	Pyr, glauc, forams, foss frags	
1620	100	Clyst, a/a	
	Tr	Lst, occ pink-crmy, hd, xln, else a/a	
	Tr	Pyr, glauc, forams, foss frags	
1630	90	Clyst, a/a	
	10	Lst, a/a	
	Tr	Forams, foss frags	
1640	95	Clyst, mostly med gry, else a/a	
	5	Lst, a/a	
	Tr	Forams, glauc	
1650	95	Clyst, a/a	
	5	Lst, a/a	
	Tr	Forams, glauc, foss frags	
1660	90	Clyst, a/a, occ slty, v sft	
	10	Lst, a/a	
	Tr	Forams, foss frags	
1670	100	Clyst, a/a, occ sft, sl stky, slty	
	Tr	Lst, a/a	
	Tr	Forams, glauc, foss frags, pyr	
1680	95	Clyst, a/a, occ sft, sl stky, slty	
	5	Lst, a/a	
	Tr	Forams, glauc, foss frags	
1690	90	Clyst, a/a	
	10	Lst, a/a	
	Tr	Forams, foss frags, glauc	
1700	90	Clyst, a/a	
	10	Lst, a/a	
	Tr	Foss frags	
1710	95	Clyst, a/a	
	5	Lst, a/a	
	Tr	Foss frags	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 05.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
7120	90	Clyst, med gry, brnish gry, frm, micromic subfiss, slty-v slty, non-sl calc	
	10	Lst, wh, frm-mod hd, micromic, occ pink- crmy, hd, xln	
	Tr	Foss frags, forams	
1730	95	Clyst, a/a, partly, sft, stky	
	5	Lst, a/a	
1735	95	Clyst, a/a, partly, sft, stky	
	5	Lst, a/a	
	Tr	Foss frags	
1740	100	Clyst, a/a	
	Tr	Lst, a/a	
	Tr	Foss frags	
1750	95	Clyst, a/a	
	5	Lst, a/a	
	Tr	Forams	
1760	90	Clyst, a/a, occ partly, sft, stky	
	10	Lst, a/a	
1770	95	Clyst, a/a, occ partly, sft, stky	
	5	Lst, a/a	
	Tr	Forams, foss frags	
1780	95	Clyst, a/a	
	5	Lst, a/a	
	Tr	Foss frags	
1790	95	Clyst, a/a	
	5	Lst, a/a	
	Tr	Forams, foss frags, pyr	
1800		a/a	
1810		a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 05.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
1820	95	Clyst, med gry, brnish gry, frm, micromic, subfiss, slty-v slty, non-sl calc, partly sft, stky	
	5	Lst, wh, frm-mod hd, micritic, occ pnk-crmy, hd, xln	
	Tr	Forams, foss frags, pyr	
1830		a/a	
1840	80	Clyst, brnish gry, else a/a	
	20	Lst, wh-gryish wh, frm-mod hd, micritic, occ sl argil, brn, transp, hd, xln	
	Tr	Pyr, foss frags	
1850	80	Clyst, brnish gry, occ med gry, else a/a	
	20	Lst, a/a	
	Tr	Pyr, foss frags	
1860	75	Clyst, a/a, occ subfiss	
	25	Lst, a/a, mostly lt brn-brn	
	Tr	Pyr	
1870	50	Clyst, a/a	
	50	Lst, a/a	
	Abun	Pyr	
	Tr	Foss frags	
1880	80	Clyst, a/a	
	20	Lst, a/a	
	Tr	Pyr	
1890	60	Clyst, a/a	
	40	Lst, a/a	
	Tr	Pyr	
1900	70	Clyst, a/a	
	30	Lst, a/a	
	Abun	Pyr	
1910	85	Clyst, a/a	
	15	Lst, a/a	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 06.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
1920	90	Clyst, brnish occ med gry, frm, micromic, occ subfiss, slty-v slty, non-sl calc, partly sft, stky	
	10	Lst, mostly lt brn-brn, frm-mod hd, micritic, occ sl argil, brn, transp, hd, xln	
	Tr	Pyr	
1930	90	Clyst, a/a	
	5	Lst, a/a	
	5	Clyst, grnish gry-grn, frm, occ micromic, non calc	
	Tr	Pyr, siderite	
1940	55	Clyst, grnish gry-grn, a/a	
	40	Clyst, brnish gry, a/a	
	5	Lst, lt gry, dolomitic, lt brn-brn, xln brnish wh, micritic, mod hd-hd	
-	Tr	Pyr, siderite	
1950	100	Clyst, grnish gry-grn, occ brnish gry, a/a	
	Tr	Pyr	
1960		a/a	
1970	100	Clyst, grnish gry-grn, occ brnish gry-med gry, frm, occ micromic, non calc, occ slty	
	Tr	Lst, a/a	
1980	100	Clyst, a/a	
	Tr	Lst, a/a	
	Tr	Pyr	
1990	100	Clyst, a/a	
	Tr	Lst, a/a	
	Tr	Pyr, forams	
2000	100	Clyst, a/a	
	Tr	Pyr	
2005		a/a	
2010	100	Clyst, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 06.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2015	100	Clyst, grnish gry-grn, brnish gry-med gry-dk gry, frm, occ micromic, occ slty, non calc	
2020	100	Clyst, grnish gry, med-dk gry, frm, occ micromic, occ sl slty, non calc	
	Tr	Pyr	
2025	100	Clyst, a/a	
	Tr	Lst, lt brn, hd, xln	
2035	100	Clyst, a/a	
	Tr	Lst, a/a	
2040	100	Clyst, a/a	
2045	100	Clyst, a/a	
2050	100	Clyst, a/a	
2055	100	Clyst, a/a	
2060	100	Clyst, a/a	
2065	100	Clyst, a/a	
2070	100	Clyst, a/a	
2075	100	Clyst, a/a	
2080	100	Clyst, a/a	
2085	100	Clyst, a/a	
2090	100	Clyst, a/a	
2095	100	Clyst, a/a	
2100	100	Clyst, a/a	
2105	100	Clyst, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 06-07.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2110	100	Clyst, grnish gry, med-dk gry, frm, occ micromic, occ sl slty, non calc	No shows
2115	100	Clyst, a/a	
2120	100	Clyst, a/a	
2125	100	Clyst, a/a	
2127	100	Clyst, a/a	
2130	100	Clyst, a/a	
	Tr	Dol, lt reddish wh, hd, xln	
	Tr	Lst, wh-gryish wh, frm-hd, sl micritic	
	Tr	Pyr	
2135	100	Clyst, a/a	
	Tr	Dol, a/a	
	Tr	Lst, a/a	
	Tr	Pyr	
	Tr	Tuff, lt gry, sft, mottled, specked	
2140	100	Clyst, a/a	
	Tr	Tuff, a/a	
	Tr	Dol, a/a	
	Tr	Lst, a/a	
	Tr	Pyr	
2145	100	Clyst, a/a	
	Tr	Tuff, a/a	
	Tr	Pyr	
2150	95	Clyst, subfiss, else a/a	
	5	Lst, a/a	
	Tr	Tuff, occ bluish gry, dk specks, else a/a	
	Tr	Pyr	
2153	95	Clyst, a/a	
	5	Lst, a/a	
	Tr	Tuff, a/a	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 07.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2156	90	Clyst, grnish gry, med-dk gry, frm, occ micromic, subfiss, occ fiss, occ sl slty non calc	No shows
	10	Lst/Dol, wh-gryish wh-lt pinkish wh, mod hd-hd, occ sl micritic	
	Tr	Tuff, lt gry, bluish gry, sft-frm, mottled, dk specks	
	Tr	Pyr	
2159	55	Clyst, grnish gry, med-dk gry, a/a	
	35	Clyst, rust brn, frm-mod hd, subfiss, non calc	
	5	Lst/Dol, a/a	
	5	Tuff, a/a	
	Tr	Pyr	
2162	50	Clyst, grnish gry, med-dk gry, a/a	
	45	Clyst, rust brn, non-sl calc, else a/a	
	5	Lst/Dol, a/a	
	Tr	Tuff	
	Tr	Pyr	
2165	60	Clyst, rust brn, a/a	
	40	Clyst, grnish gry, med-dk gry, a/a	
	Tr	Lst/Dol, occ xln, else a/a	
	Tr	Pyr	
2168	60	Clyst, rust brn, a/a	
	35	Clyst, grnish gry, med-dk gry, a/a	
	5	Lst/Dol, a/a	
	Tr	Pyr	
2171	70	Clyst, rust brn, bluish gry, else a/a	
	20	Clyst, grnish gry, med-dk gry, a/a	
	5	Lst/Dol, a/a	
	5	Kaolin?, sft, wh	
	Tr	Tuff	
2174	95	Clyst/Sh, vari coloured, frm-mod hd, occ sft subfiss-fiss, grdng shly, non calc-calc, occ sl slty	
	5	Lst, a/a	
	Tr	Tuff, a/a	
	Tr	Kaolin, a/a	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 07.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2177	75	Clyst/Sh, varicoloured, frm-mod hd, occ sft, subfiss-fiss, grdng shly, non calc-calc, occ sl slty	No shows
	15	Lst, wh-gryish wh, mod hd, occ sl micritic	
	10	Kaolin?, wh, sft	
	Tr	Tuff, lt gry, bluish gry, sft-frm, mottled dk specks	
2180	80	Clyst/Sh, a/a	
	10	Lst, a/a	
	10	Kaolin?, a/a	
	Tr	Pyr	
2183	85	Clyst, a/a, partly v calc, else a/a	
	10	Lst, a/a	
	5	Kaolin, a/a	
2186	85	Clyst/Sh, a/a	
	10	Lst, a/a	
	5	Kaolin?, a/a	
	Tr	Tuff, pnk, else a/a	
2189	95	Clyst/Sh, varicoloured, incr amount of med-dk gry, else a/a	
	5	Lst, a/a	
	Tr	Tuff, a/a	
	Tr	Pyr	
2192	95	Clyst/Sh, incr slty, a/a	
	5	Lst, a/a	
	Tr	Pyr	
	Tr	Tuff, a/a	
2195	95	Clyst/Sh, decr. amount of rust brn, else a/a	
	5	Lst, a/a	
	Tr	Pyr	
2198	95	Clyst, a/a	
	5	Lst, a/a	
	Tr	Pyr, tuff	
2201	60	Clyst, a/a	
	40	Lst, a/a	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 07.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2204	80	Clyst/Sh, lt-med gry, occ dk gry, bluish wh, frm-mod hd, subfiss-fiss, occ sl micromic, non calc-calc, occ sl slty	No shows
	20	Lst, wh-gryish wh, frm-mod hd, argil, occ microxln	
	Tr	Pyr	
2207	75	Clyst/Sh, occ pyritic, else a/a	
	25	Lst, a/a	
	Tr	Pyr	
2210	70	Clyst/Sh, occ clyey sft, else a/a	
	30	Lst, a/a	
	Tr	Pyr	
2213	80	Clyst/Sh, lt-med gry, occ dk gry, bluish wh, frm-mod hd, subfiss-fiss, occ sl micromic, non calc-calc, occ sl slty	
	20	Lst, a/a, occ xln	
	Tr	Pyr	
2216	85	Clyst/Sh, a/a	
	15	Lst, a/a	
	Tr	Pyr	
2219	85	Clyst/Sh, occ clyey, sft, stky, else a/a	
	15	Lst, a/a	
	Tr	Pyr	
2222	80	Clyst/Sh, a/a	
	20	Lst, a/a	
	Tr	Pyr	
2225	90	Clyst/Sh, med-dk gry, occ bluish gry, else a/a	
	10	Lst, occ sl micritic, else a/a	
	Tr	Pyr	
2228	80	Clyst/Sh, incr slty, else a/a	
	20	Lst, a/a	
	Tr	Tuff, bluish gry, dk spots	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
Well no: 15/9-11
Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
Hole size: 12 1/4" Geologist: M. Østby / M. Eien Date: 07.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2231	90	Clyst/Sh, med-dk gry, occ bluish gry, frm-mod hd, subfiss-fiss, occ sl micromic, occ pyritic, occ slty-v slty in parts, non calc-calc, occ clyey, sft, stky	No shows
	5	Lst, wh-gryish wh, frm-mod hd, argil-micritic, occ microxln-xln	
	5	Tuff, lt gryish wh, dk spots, mod hd	
	Tr	Pyr	
2234	95	Clyst/Sh, a/a	
	5	Lst, a/a	
	Tr	Tuff a/a	
	Tr	Pyr	
2237	95	Clyst/Sh, a/a	
	5	Lst, a/a	
	Tr	Tuff, a/a	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: R. Nylend Date: 08.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2264	100	Clyst/Sh, med-dk gy, occ rd brn, occ bluish gy, frm-mod hd, occ sl micromic, subfiss-fiss, occ slty, occ pyr, non calc, occ sl calc, occ clyey, sft, stky	No shows
	Tr	Lst, wh-lt gy wh, occ brn, frm-hd, microxln -xln	
	Tr	Pyr	
	Tr	Tuff, lt gy-wh, dk speks, mod hd	
2267		a/a	
2270		a/a	
2273	100	Clyst/Sh, mainly med-dk gy brn, else a/a	
	Tr	Lst, a/a	
	Tr	Pyr	
2276		a/a	
2279		a/a	
2282		a/a	
2285		a/a	
2288		a/a	
2291		a/a	
2294		a/a	
2297		a/a	
2300		a/a	
2303		a/a	
2306		a/a	
2309		a/a	
2312	95	Clyst/Sh, a/a	
	5	Lst, a/a	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: R. Nyland Date: 08.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2315	60	Clyst/Sh, med-dk gy, occ brn gy, frm-mod hd, occ sl slty, non calc, subfiss-fiss	No shows
	20	Clyst/Sh, bluish gy, frm-mod hd, non calc, occ sl calc, subfiss-fiss	
	20	Clyst (kaolinitt?), wh-lt gy, v sft, non calc,	
	Tr	Lst, wh-lt gy wh, occ brn, frm-hd, microxln-xln	
	Tr	Pyr	
2318	40	Clyst/Sh, med-dk gy, else a/a	
	30	Sh/Clyst, bluish gy, else a/a	
	30	Clyst (kaolinitt?), a/a	
	Tr	Lst, a/a	
	Tr	Pyr	
2321	50	Sh/Clyst, bluish gy, else a/a	
	40	Clyst/Sh, med-dk gy, else a/a	
	10	Clyst (kaolinitt?), a/a	
	Tr	Lst, a/a	
	Tr	Pyr	
2324	50	Clyst/Sh, med-dk gy, else a/a	
	50	Clyst/Sh, bluish gy, else a/a	
	Tr	Lst, a/a	
	Tr	Clyst (kaolinitt?), a/a	
2327		a/a	
2330		a/a	
2333		a/a	
2336		a/a	
2339		a/a	
2342		a/a	
2345		a/a	
2348	50	Clyst/Sh, med-dk gy, else a/a	
	50	Clyst/Sh, bluish gy, else a/a	
	Tr	Lst, a/a	
	Tr	Clyst (kaolinitt?), a/a	
	Tr	Sd, clr qtz, vf-f, lse, subang-subrnd, occ rnd	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: R. Nyland Date: 09.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2351	50	Clyst/Sh, med-dk gy, occ brn gy, frm-mod hd, occ sl slty, non calc, subfiss-fiss	No shows
	50	Clyst/Sh, bluish gy, frm-mod hd, non calc, occ sl calc, subfiss-fiss	
	Tr	Lst, wh-lt gy wh, occ brn, frm-hd, microxln-xln	
	Tr	Clyst (kaolinitt?), wh-lt gy, v sft, non calc,	
	Tr	Sd, clr qtz, vf-f, lse, subang-subrnd, occ rnd	
2354	50	Clyst/Sh, med-dk gy, else a/a	
	50	Clyst/Sh, bluish gy, else a/a	
	Tr	Lst, a/a	
	Tr	Clyst (kaolinitt?), a/a	
	Tr	Sd, a/a	
	Tr	Pyr	
	Tr	Glauc	
2357	50	Clyst/Sh, bluish gy, else a/a	
	40	Clyst/Sh, med-dk gy, else a/a	
	10	Sd, mod srtd, sl calc cmt, else a/a	
	Tr	Pyr	
	Tr	Glauc	
2360	50	Clyst/Sh, bluish gy, else a/a	
	30	Clyst/Sh, med-dk gy, else a/a	
	20	Sd, a/a	
	Tr	Pyr	
	Tr	Glauc	
2363	40	Clyst/Sh, bluish gy, else a/a	
	30	Clyst/Sh, med-dk gy, else a/a	
	30	Sd, a/a	
	Tr	Pyr	
	Tr	Glauc	
2364	2379	See: core description	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
Well no: 15/9-11
Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
Hole size: 12 1/4" Geologist: R. Nylend Date: 11.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2381	100	Sh, med gy-bluish gy, occ grn gy, sft-mod hd occ sl slty, occ pyr, subfiss-fiss	No shows
	Tr	Sst, qtz, clr-wh, vf-f, v hd, subang- subrnd, sil cmt, occ sl calc, occ sl micromic, glauc	
	Tr	Lst, clr-wh, microxln-xln, mod hd	
	Tr	Pyr, glauc	
	Tr	Forams	
2384		a/a	
2387	50	Sh, a/a	
	50	Sd, clr qtz, vf-f, lse, subang- subrnd, mod srted	
	Tr	Lst, a/a	
	Tr	Pyr, glauc	
2390	80	Sd, a/a	
	20	Sh, a/a	
	Tr	Lst, a/a	
	Tr	Pyr, glauc	
2393		a/a	
2395-2514		See: core description	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 12 1/4" Geologist: M. Østby / S. Bjerkenes Date: 18.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2517	80	Sh, lt-med gry, lt bluish gry, med-dk brn frm-mod hd, micromic, occ glauc, non-sl calc, occ pyr	No shows
	15	Sd, clr qtz, crs-v crs, subrnd-rnd, lse	
	5	Sst, vf-f, subrnd, hd, calc cmt	
	Tr	Pyr, glauc	
2520	70	Sh, a/a	
	25	Sd, med-crs, else a/a	a/a
	5	Sst, a/a	
	Tr	Lst/Chlk, yel wh-gry wh, hd, sl argil	
	Tr	Pyr, glauc, foss frag	
2523	70	Sh, a/a	
	25	Sd, a/a	
	5	Sst, a/a	
	Tr	Lst/Chlk, a/a	a/a
	Tr	Pyr, glauc	
2526	50	Sh, a/a	
	45	Sd, f-med, else a/a	a/a
	5	Sst, a/a	
	Tr	Lst/Chlk, a/a	
	Tr	Pyr	
2529	55	Sd, a/a	
	30	Lst/Chlk, mod hd, else a/a	a/a
	10	Sh, a/a	
	5	Sst, a/a	
	Tr	Foss frag	
2532	100	Lst/Chlk, a/a	
2535	100	Lst/Chlk, wh-yel wh, mod hd-hd, occ frm	
2538	100	Lst/Chlk, a/a	
2541	100	Lst/Chlk, a/a	
2544	100	Lst/Chlk, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
Well no: 15/9-11
Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
Hole size: 12 1/4" Geologist: M. Østby / S. Bjerkenes Date: 19.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2547	100	Lst/Chlk, wh-yel wh, lt brnish wh, mod hd-hd occ frm, occ sl argil	No shows
2550		a/a	
2553		a/a	
2556	100	Lst/Chlk, sft-frm, occ hd, else a/a	
2559	100	Lst/Chlk, sft-frm, rarely hd, else a/a	
2562	100	Lst/Chlk, sft-frm, else a/a	
2565	100	Lst/Chlk, sft-frm, occ mod hd, else a/a	
2568	100	Lst/Chlk, sft-frm, occ mod hd-hd, else a/a	
2571	100	Lst/Chlk, a/a	
2574		a/a	
2577	70 30	Lst/Chlk, a/a Mrl, pnk, sft-frm	
2580	70 30	Mrl, a/a Lst/Chlk, a/a	
2583	80 20	Mrl, a/a Lst/Chlk, a/a	
2586	50 50	Lst/Chlk, a/a Mrl, a/a	
2588	50 50	Lst/Chlk, a/a Mrl, a/a	
2590	50 50	Lst/Chlk, a/a Mrl, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 25.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2592	95	Chlk/Lst, wh-yel wh, sft-frm, loc sl argil	
	5	Mrl/Lst, lt pnk, sft-frm	
	Tr	Clyst, rust brn, sft, blk, v calc	
	Tr	Clyst, dk grnish gy, frm, non-calc	
2595	95	Chlk/Lst, wh-yel wh and wh-pnk, else a/a	
	5	Mrl/Lst, a/a	
	Tr	Clyst, rust brn and dk grnish gy, a/a	
2598	95	Chlk/Lst, a /a	
	5	Mrl, a/a	
	Tr	Clyst, a/a	
2501	100	Chlk/Lst, dom yel wh-buff, sl argil, else a/a	
	Tr	Clyst, a/a	
2604	100	Chlk/Lst, a/a	
	Tr	Clyst, a/a	
2607	100	Chlk/Lst, a/a	
	Tr	Clyst, dk grnish gy, loc hd, else a/a	
2610	100	Chlk/Lst, a/a	
	Tr	Clyst, a/a	
2613	100	Chlk/Lst, wh and lt pnk-buff, else a/a	
	Tr	Clyst, dom rust brn, else a/a	
2616	100	Chlk/Lst, a/a	
	Tr	Clyst, a/a	
2619	100	Chlk/Lst, a/a	
	Tr	Clyst, a/a	
2622	100	Chlk/Lst, a/a	
	Tr	Clyst, a/a	
2625	100	Chlk/Lst, a/a	
	Tr	Clyst, a/a	
2628	100	Chlk/Lst, a/a	
	Tr	Clyst, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 25-26.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2631	100	Chlk/Lst, buff-lt pnk-wh, sft-frm, loc sl argil	
	Tr	Clyst, rust brn, frm, v calc, micromic, blk	
	Tr	Clyst, dk grnish gy, frm-hd, non-sl calc	
2634	100	Chlk/Lst, a/a, occ dol, hd, when lt brn	
	Tr	Clyst, rust brn and dk grnish gy, a/a	
2637	100	Chlk/Lst, a/a	
	Tr	Clyst, a/a	
2640	95	Chlk/Lst, a/a	
	5	Clyst, dom dk grnish gy, else a/a	
	Tr	Sd, clr, f, rnd, qtz	
2643	90	Chlk/Lst, a/a	
	10	Clyst/Sh, dk grnish gy, blk-fiss, loc slty and calc	
	Tr	Clyst, rust brn, a/a	
	Tr	Sd, a/a, and f-med, ang, mlky	
	Tr	Glauc/Chlorite?	
2646	100	Chlk/Lst, lt gy-buff-lt brn, else a/a	
	Tr	Clyst, rust brn, a/a, subfiss, grng to Sh	
2649	100	Chlk/Lst, dom lt-gy, prtly dol when lt brn, hd, a/a	
	Tr	Clyst, rust brn a/a	
2652	100	Chlk/Lst, lt-gy, frm-hd, loc sft, loc lt pnk sft	
	Tr	Dol, lt brn, hd	
	Tr	Clyst, rust brn, a/a	
2655	80	Chlk/Lst, wh-lt gy, frm-hd, loc sft, a/a	
	5	Mrl, lt pnk and med gy, sft-frm, grng to v calc sh when gy	
	5	Clyst, rust brn, a/a, loc non-calc	
	5	Clyst/Sh, dk grnish gy, frm-hd, loc slty, non-sl calc	
	5	Sh, dk gy, hd, dol	
	Tr	Dol, lt brn, hd	
	Tr	Sd, clr f, rnd, qtz	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 26.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2658	85	Lst/Chlk, wh-lt gy, loc pnk, frm-hd, loc sl argil	
	5	Mrl, lt pnk and med gy, sft-frm	
	5	Clyst, rust brn, frm, v calc, loc non calc, micromic, blkly-subfiss	
	5	Clyst/Sh, dk grnish gy, frm-hd, loc slty, non-calc-dol	
	Tr	Dol, lt brn, hd	
2661	90	Lst/Chlk, a/a	
	5	Clyst/Sh, rust brn and dk grnish gy, a/a	
	5	Mrl, a/a	
2664	100	Lst/Chlk, wh and lt gy, sft-hd, argil, loc pnk	
	Tr	Clyst/Sh, a/a	
	Tr	Mrl, a/a	
2667	100	Lst/Chlk, grdng to Mrl, incr argil, dom lt gy	
	Tr	Clyst/Sh, a/a	
	Tr	Mrl, a/a	
	Tr	Dol, lt yel brn, hd	
2670	70	Lst/Mrl, lt brn-pnk and lt gy, sft-frm	
	30	Chlk/Lst, wh-lt gy, frm-hd	
	Tr	Clyst, rust brn, a/a, subfiss, grdng to Sh	
	Tr	Dol, a/a	
2673	80	Lst/Mrl, a/a	
	20	Chlk/Lst, a/a	
	Tr	Sh, rust brn, a/a, and med gy, grnish gy, frm, non-calc	
	Tr	Dol, a/a	
	Tr	Sd, clr, f, rnd qtz	
2676	60	Lst/Mrl, w/dis glauc, else a/a	
	35	Chlk/Lst, w/dis glauc, else a/a	
	5	Chert, mlky wh, amorph qtz, spltry	
	Tr	Sh, a/a	
	Tr	Dol, a/a	
	Tr	Sd, a/a	
2679	60	Lst, wh-lt gy, frm-hd, sucr, glauc, argil	
	40	Lst/Mrl, dom lt gy, a/a	
	Tr	Chert, a/a	
	Tr	Sh, rust brn, loc dk brnish gy, a/a	
	Tr	Sd, a/a	
	Tr	Dol, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R. M. Larsen Date: 27.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2682	100	Lst/Mrl, lt gy, loc wh, loc pnk, frm-hd, sucro, glauc	
2685	100	Lst, grdng to Mrl, a/a	
	Tr	Sh, rust brn, frm, v-calc, micromic	
2688	50	Mrl, lt-med gy, frm, glauc	
	50	Lst, lt gy-wh, loc pnk, frm-hd, surc, glauc, argil	
	Tr	Sh, a/a	
2691	70	Lst, wh, lt pnk, a/a	
	20	Mrl, a/a	
	10	Sh, a/a	
	Tr	Sd, clr, f, rnd, qtz	
2694	50	Lst, a/a	
	40	Mrl, a/a	
	10	Sh, a/a	
	Tr	Sd, a/a	
	Tr	Dol, lt brn, hd	
2697	50	Lst, incr pnk, else a/a	
	40	Mrl, a/a	
	10	Sh, a/a	
	Tr	Sd, a/a	
	Tr	Dol, a/a	
2700	50	Mrl, lt-med gy, grdng to argil Lst, a/a	
	35	Lst, pnk-lt yel brn and wh-lt gy, a/a	
	15	Sh, a/a	
	Tr	Dol, a/a	
2703	55	Lst, a/a	
	30	Mrl, a/a	
	15	Sh, a/a	
	Tr	Dol, a/a	
2706	55	Lst, a/a, rarly glauc	
	30	Mrl, a/a, rarly glauc	
	15	Sh, a/a	
	Tr	Dol, a/a	
2709	55	Lst, a/a	
	30	Mrl, a/a	
	15	Sh, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 27.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2712	55	Lst, wh-lt gy, pnk-lt yel brn, frm-hd, sucro and argil when gy, loc glauc	
	30	Mrl, lt-med gy, frm, loc glauc, grdng to Lst, slty	
	15	Sh, rust brn, frm, v calc, micromic	
2715	55	Lst, a/a	
	30	Mrl, a/a	
	15	Sh, a/a	
2718		a/a	
2721		a/a	
2724	50	Mrl, med-dk gy, subfiss-blky, frm, grdng to Sh loc glauc, slty	
	30	Lst, a/a	
	10	Sh, a/a, loc dk grnsh gy	
	10	Sh, med-dk gy, subfiss-fiss, slty, v calc	
2727	40	Mrl, a/a	
	40	Lst, a/a	
	20	Sh, rust brn and med-dk gy, a/a	
2730	40	Mrl, a/a	
	40	Lst, a/a	
	20	Sh, a/a	
2733	40	Mrl, a/a	
	35	Lst, a/a	
	15	Sh, rust brn, a/a	
	10	Sh, med-dk gy, a/a	
2736	40	Mrl, a/a	
	35	Lst, dom pnk, else a/a	
	15	Sh, rust brn, a/a	
	10	Sh, med-dk gy, a/a	
2739	40	Mrl, a/a	
	35	Lst, a/a	
	15	Sh, rust brn, a/a	
	10	Sh, med-dk gy, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 27.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2742	40	Mrl, med-dk gy, subfiss-blky, frm, grdng to Sh, loc glauc, loc slty	
	35	Lst, lt pnk, wh-lt gy, frm-hd, loc argil, loc glauc	
	15	Sh, rust brn, frm, v calc, micromic	
	10	Sh, med-dk gy, subfiss-fiss, slty, v calc	
2745	60	Mrl, lt-med-dk gy, blky-subfiss, loc grdng to Sh, frm, slty-v slty, loc glauc, loc grdng to lt gy Lst, a/a	
	20	Lst, lt pnk and wh, frm-hd	
	10	Sh, rust brn, a/a	
	10	Sh, med-dk gy, a/a	
2748	70	Mrl, incr fissility, else a/a	
	20	Sh, a/a	
	10	Lst, a/a, loc lt yel brn	
	Tr	Lign, dk brn-blk, brit-mod hd	
	Tr	Sd, clr, f-med rnd, qtz	
2751	60	Sh, rust brn, a/a, loc blky grdng into Mrl	
	20	Mrl/Sh, lt-dk gy, a/a	
	20	Lst, wh-pnk-lt yel brn, a/a	
	Tr	Sd, a/a	
	Tr	Foss frags	
2754	50	Mrl/sh, rust brn, a/a	
	30	Lst, a/a	
	20	Mrl/Sh, lt-dk gy, a/a, loc grdng to Lst	
	Tr	Lign, a/a, ip. pyr	
	Tr	Sd, a/a	
	Tr	Foss frags	
2757	50	Sh, med-dk gy, subfiss-fiss, slty, sl calc, loc dol	
	30	Lst, a/a, and med brn, hd, brn	
	20	Mrl/Sh, rust brn, a/a	
	Abun	Pyr	
	Abun	Sd, a/a	
	Tr	Lign, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 28.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2760	60	Sh, med-dk gy, subfiss-fiss, slty, non-sl calc, frm,	
	30	Lst, wh-lt pnk, loc med brn, frm-hd, xln loc glauc	
	10	Mrl/Sh, rust brn, subfiss-fiss, frm, v calc, micromic	
	Abun	Pyr	
	Abun	Sd, clr, vf-med, subrnd-rnd, qtz	
	Tr	Coal, blc, lust, brit-mod hd, ip pyr	
2763	50	Sh, a/a	
	40	Lst, a/a	
	10	Sh, rust brn, a/a	
	Abun	Pyr	
	Abun	Sd, a/a	
	Tr	Coal, a/a	
2766	45	Sh, med-dk gy, a/a, non calc	
	30	Lst, a/a	
	20	Sh, rust brn, a/a	
	5	Sh, lt grnish gy, frm, micromic, non calc	
	Abun	Pyr	
	Abun	Sd, a/a	
	Tr	Coal, a/a	
	Tr	Glauc	
2769	45	Sh, med-dk a/a	
	35	Lst, a/a	
	20	Sh, rust brn, a/a	
	Tr	Sh, lt grnish gy, a/a	
	Abun	Pyr	
	Abun	Sd, a/a	
	Tr	Coal, a/a	
2772	45	Sh, med-dk, loc grnish, gy, else a/a	
	30	Lst, a/a	
	20	Sh, rust brn, a/a	
	5	Sh, lt grnish gy, a/a	
	Tr	Sd, lse, clr, vf-med, rnd, qtz	
2775	50	Sh, a/a	
	15	Lst, a/a	
	15	Sh, rust brn, a/a	
	10	Sh, lt grnish gy, sl calc, else a/a	
	5	Sd, dom vf-f, else a/a	
	5	Pyr	
	Tr	Glauc, pell	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 28.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2778	100	Sh, dk grnish gy, frm-hd, v slty, non calc org mat (lign)	
	Tr	Sh, rust brn, frm, v calc, micromic	
	Tr	Lst, wh-lt pnk, frm-hd, sl argil when pnk	
	Tr	Sh, lt grnish gy, frm, micromic, non calc, occ pyr	
	Abun	Sd, clr, vf-med, rnd qtz	
	Tr	Coal, blk, brit-hd, lustreous	
	Tr	Glauc, pell	
	Tr	Pyr,	
2781	70	Sh, dk grnish gy, a/a	
	20	Lst, a/a	
	10	Sh, rust brn, a/a	
	Tr	Sh, lt grnish gy, a/a	
	Abun	Sd, a/a	
	Tr	Pyr, a/a	
	Tr	Coal, a/a	
	Tr	Glauc, a/a	
2784	60	Sh, dk grnish gy, a/a, occ med gy, calc	
	20	Lst, a/a	
	10	Sh, rust brn, a/a	
	5	Sd, a/a	
	5	Pyr	
	Abun	Sh, lt grnish gy, a/a	
	Tr	Coal, a/a	
	Tr	Glauc	
2787	80	Sh, a/a	
	10	Lst, a/a	
	5	Sh, rust brn, a/a	
	3	Sd, vf-crs, else a/a	
	2	Pyr, a/a	
	Tr	Sh, lt grnish gy	
	Tr	Coal, a/a	
	Tr	Glauc, a/a	
2790	70	Sd/Sst, clr qtz, f-med, subang-rnd, fair- well srtd, dom lse grns, agg, sil and sl calc cmt, sl pyr and kao, agg med hd	No shows
	30	Sh, a/a	
	Tr	Lst, a/a	
	Tr	Pyr	
	Tr	Coal	
	Tr	Glauc	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 28.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2793	50	Sd/Sst, clr qtz, f-med, subang-rnd, fair-well srted, dom lse grns, sl pyr, agg sil and sl calc and sl kao cmt, hd, poor por in agg	
	30	Sh, dk grnish gy, frm, slty-v slty, non calc, lign frags	
	15	Lst, wh-lt pnk, frm-hd	
	5	Sh, rust brn, frm, v calc	
	Tr	Pyr	
	Tr	Glauc	
	Tr	Coal	
2796	90	Sd/Sst, loc crs, else a/a	
	10	Sh, dk grnish gy, a/a	
	Tr	Lst, a/a	
	Tr	Pyr	
	Tr	Sh, rust brn, a/a	
	Tr	Sh, lt grn, sft, micromic, non-calc	
	Tr	Glauc	
	Tr	Coal	
2799	80	Sd/Sst, a/a	
	10	Sh, dk grnish gy, a/a	
	10	Sh, rust brn, a/a	
	Tr	Pyr, Lst, Glauc, a/a	
2802	95	Sd/Sst, a/a	
	5	Sh, dk grnish gy, a/a, loc pyr	
	Tr	Lst, a/a	
	Tr	Sh, rust brn, a/a	
	Tr	Pyr, a/a	
	Tr	Coal, loc pyr	
	Tr	Glauc	
	Tr	Clyst/Sh, lt-med brn, blk-subfiss, sft-frm, micromic, non calc	
2805	90	Sd/Sst, f-v crs, poor-fair srt, else a/a	
	10	Sh, dk grnish gy, a/a	
	Tr	Lst, a/a	
	Tr	Sh, rust brn, a/a	
	Tr	Coal, a/a	
	Tr	Pyr, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 28.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2808	100	Sd/Sst, clr qtz, f-med, subang-rnd, fair-well srtd, dom, lse grns, sl pyr, agg sil, sl calc and sl kao cmt, hd, poor por in agg	
	Tr	Sh, dk grnish gy, frm, v slty grdng to Sltst, non calc, pyr, lign	No shows
	Tr	Sh, rust brn, frm, v calc, micromic, loc pyr	
	Tr	Sh, med brn, subfiss, frm, micromic, non calc	
	Tr	Pyr, Coal, Glauc	
	Tr	Lst, wh-lt pnk, frm-hd	
2811	70	Sd/Sst, dom f, else a/a	
	25	Sh, dk grnish gy, a/a	
	5	Lst and rust brn Sh, a/a	
	Tr	Sh, med brn, a/a	
	Tr	Pyr, Coal, Glauc	
2814	65	Sd/Sst, f, occ med, else a/a	
	25	Sh, dk grnish gy, a/a	
	5	Sh, rust brn, a/a	
	5	Lst, a/a	
	Tr	Sh, med brn, a/a	
	Tr	Pyr, Coal, Glauc	
2817	65	Sd/Sst, occ vf, occ crs, poor srtd, else a/a	
	25	Sh, dk grnish gy, a/a	
	10	Lst and rust brn Sh, a/a	
	Tr	Pyr, Coal, Glauc	
2820	70	Sd/Sst, a/a	Scattered
	25	Sh, dk grnish gy, a/a	rare br yel
	5	Lst and rust brn Sh, a/a	fluor, no
	Tr	Sh, med brn, a/a	cut
	Tr	Pyr, Glauc	
2823	50	Sd/Sst, vf-v crs, a/a	
	40	Sh, dk grnish gy, a/a	
	10	Lst and rust brn Sh, a/a	
	Tr	Sh, med brn, a/a and lt grnish gy, sft, non calc	
	Tr	Pyr, Glauc	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: R.M. Larsen Date: 28-29.10.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2826	70	Sd/Sst, clr qtz, dom med-crs, occ f, occ v crs, poor-fair srt, subang-rnd, freq broken grns, dom lse grns, fair-good por	
	20	Sh, med-dk grnish gy, frm, v slty, non calc, pyr, lign	
	5	Lst, wh-lt pnk, frm-hd	
	5	Sh, rust brn, frm, v calc, micromic	
	Tr	Pyr, Glauc, pyr	
	Tr	Sh, lt grnish gy, sft, non calc	
2829	95	Sd/Sst, clr qtz, lse grns, med-v crs, occ peb, agg: vf-f, fair srted, subang-subrnd, agg non calc, sil and kao cmt, sl pyr, hd-v hd	
	5	Sh, lt-med-dk grnish gy, a/a	
	Tr	Lst and Sh, rust brn, a/a, Lst loc glauc	
	Tr	Pyr, Coal, Glauc	
	Tr	Musc, crs flakes	
2832	100	Sst/Sd, dom Sst, a/a, musc	
	Tr	Sh, Lst, Pyr and musc a/a, rare glauc	
2835	40	Sst, a/a, rare lse grns, a/a	
	30	Sh, Med-dk grnish gy, a/a	
	15	Lst, a/a	
	10	Sh, rust brn, a/a	
	5	Sh, lt-med gy, frm, calc	
	Tr	Pyr, Coal, Glauc	
2838	40	Sh, med-dk gy, a/a	
	25	Sst/Sd, a/a	
	20	Lst, a/a	
	10	Sh, rust brn, a/a	
	5	Sh, lt-med gy, a/a	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: A. Storli Date: 29.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2841	60	Sh, med-dk gy, occ grnish gy, frm, non-v sl, calc	No shows
	20	Lst, wh-lt pnk, frm-hd	
	15	Sh, red brn, frm, v calc	
	5	Sst/Sd, clr qtz, occ pnk, f-med, mostly Sst, f, silica cmt and sl calc cmt, occ glauconitic, subang-subrnd	
	Tr	Pyr, Glauc	
2944	60	Sh, med-dk gy, occ grnish gy, a/a	
	20	Sh, red brn, a/a	
	15	Lst, a/a	
	5	Sst/Sd, a/a	
	Tr	a/a	
2847	70	Sh, med-dk gy, occ grnish gy, a/a	
	15	Sh, red brn, a/a	
	10	Lst, a/a	
	5	Sst/Sd, a/a	
	Tr	a/a	
2850	70	Sh, med-dk gy, occ grnish gy, a/a	
	20	Sh, red brn, a/a	
	5	Lst, a/a	
	5	Sst/Sd, a/a	
	Tr	Pyr, Glauc	
	Tr	Sltst, lt gy kaolinit/calc cmt	
2853	70	Sh, med-dk gy, occ grnish gy, a/a	
	20	Sh, red brn, a/a	
	10	Sltst, lt gy, grdng into vf Sst	
	Tr	Lst, lt pnk, frm, hd	
	Tr	Sd, f-med	
	Tr	Glauc, Pyr	
2856	60	Sh, med-dk gy, a/a	
	25	Sh, red brn, a/a	
	15	Sltst, a/a	
	Tr	Sd, crl qtz, f-med	
	Tr	Lst, a/a	
	Tr	Pyr, Glauc	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: A. Storli Date: 29.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2859	60	Sh, med-dk gy, occ grnish gy, frm, non-sl calc, slty, carb	
	20	Sh, red brn, frm, non-sl calc	
	20	Sltst, lt gy, grdng into Sst vf, fri-mod hd, kaolinite cmt, sl calc	
	Tr	Lst, wh-lt pnk	
	Tr	Sd, f-med	
	Tr	Pyr	
2862	50	Sltst, lt gy, grdng into vf Sst, a/a	
	25	Sh, red brn, a/a, occ lt gy	
	25	Sh, med-dk gy, grnish gy, a/a, occ mod hd	
	Tr	Lst, a/a	
	Tr	Pyr, Glauc	
2865	70	Sh, red brn, occ lt gy, sft-frm, non-sl calc, sl slty	
	20	Sh, med-dk gy, a/a	
	10	Sltst/Sst, a/a	
	Tr	Pyr, Glauc	
	Tr	Sd, f-med	
2868	80	Sh/Clyst, red brn, sft-frm, non-sl calc, slty-v slty	
	10	Sltst, lt gy a/a	
	10	Sh, dk gy, occ med gy, a/a	
2871	70	Sh/Clyst, red brn, a/a	
	20	Sh, dk gy-med gy, occ grnish gy, a/a	
	10	Sltst, a/a	
	Tr	Sd, clr qtz, lt red-red brn, f-med	
	Tr	Pyr	
2874	85	Sh/Clyst, red brn, occ lt gy, a/a	
	10	Sd, f-med, subang-subrnd, lse	
	5	Sh, med-dk gy, a/a	
	Tr	Pyr	
2877	95	Sh/Clyst, red brn, occ lt gy, a/a	
	5	Sh, dk gy-med gy, a/a	
	Tr	Sd, a/a	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: A. Storli Date: 31.10.81

DEPT	LITH. #	LITHOLOGIC DESCRIPTION	Shows&Remarks
2880	100	Sh/Clyst, red brn, occ grnish gy, sft, non-sl calc, slty	
	Tr	Sltst/Sd/Sh, dk gy	
	Tr	Lst, lt pnk, mod hd	
2883	100	Sh/clyst, red brn, grnish gy, a/a,	
	Tr	a/a	
2886	100	Sh/Clyst, red brn, grnish gy, a/a, occ frm	
	Tr	a/a	
2889	100	Sh/Clyst, a/a	
	Tr	a/a	
2892	100	Sh/Clyst, a/a	
	Tr	Sd, clr qtz, occ pnk, f-med	
	Tr	Pyr	
2895	100	Sh/Clyst, a/a	
	Tr	Sd, a/a	
2898	95	Sh/Clyst, a/a	
	5	Sd, clr qtz, f-med, subang-subrnd, lse	
	Tr	Pyr	
2901	95	Sh/Clyst, a/a	
	5	Sd, a/a	
2904	90	Sh/Clyst, a/a	
	10	Sd, clr-pnk qtz, f-med, subang-subrnd, lse	
	Tr	Pyr, Glauc	
2907	95	Sh/Clyst, a/a	
	5	Sd, a /a	
	Tr	Pyr	
2910	95	Sh/Clyst, a/a	
	5	Sd, a/a	
	Tr	Pyr	
2913	95	Sh/Clyst, a/a	
	5	Sd, clr qtz, f-med, occ vf, subang-subrnd, lse	
	Tr	Pyr	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: A. Storli Date: 01.11.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2916	90	Sh/Clyst, red brn, occ grnish gy, sft, non calc, occ v sl calc, slty	
	10	Sd, clr qtz, f-med, occ vf, subang-subrnd, lse	
	Tr	Coal, blk, brittle	
	Tr	Pyr	
2919	95	Sh/Clyst, a/a	
	5	Sd, a/a	
	Tr	Pyr	
	Tr	Coal, /a	
2922	95	Sh/Clyst, a/a	
	5	Sd, occ v crs, else a/a	
	Tr	Pyr, kaol, wh-lt gy, sft	
2925	50	Sd, clr qtz, f-crs, occ v crs, subang-subrnd, lse	
	45	Sh/Clyst, a/a	
	5	Coal, blk, brittle	
	Tr	Pyr, kaol, wh-lt gy	
2928	60	Sh/Clyst, a/a	
	30	Sd, a/a	
	10	Coal, a/a	
	Abun	Kaol	
	Tr	Pyr	
2931	50	Sd, a/a	
	30	Sh/Clyst, red brn, occ grnish gy, a/a	
	20	Kaol, wh-lt gy, sft	
	Tr	Coal	
	Tr	Pyr	
2934	80	Sd, clr qtz, f-med, occ crs, w srted, subang-subrnd, lse	
	20	Sh/Clyst, red brn, a/a	
	Tr	Kaol	
	Tr	Lst, wh-pnk, pyr	
2937	80	Sd, a/a	
	20	Sh/Clyst, red brn, dk gy, grn gy, calc-non calc, slty	
	Tr	Kaol, pyr	
	Tr	Lst, wh, mod hd	

WELLSITE SAMPLE DESCRIPTION

Country: Norway Area: North Sea Field: Gamma Structure
 Well no: 15/9-11
 Coordinates: 58° 24' 02.53" N; 01° 53' 41.79" E
 K.B.E.: 25 m Company : Statoil/Esso/Norsk Hydro
 Hole size: 8½" Geologist: A. Storli Date: 01.11.81

DEPT	LITH. %	LITHOLOGIC DESCRIPTION	Shows&Remarks
2940	80	Sd, clr qtz, f-med, occ crs, w srted, subang-subbrnd, lse	
	20	Sh/Clyst, red brn, occ grn gy, med gy, occ v calc, slty	
	Tr	Lst, lt pnk, mod hd-hd	
2943	90	Sd, a/a	
	10	Sh, a/a	
	Tr	Pyr	
2946	80	Sd, a/a	
	10	Pyr	
	10	Sh, a/a	
2949	40	Sh, med-dk gy, occ grnish gy, frm; non calc, slty	
	30	Sh, red brn, lt grnish gy, frm-mod hd, non calc, occ v calc, slty	
	30	Sd, a/a	
	Tr	Lst, lt pnk, hd	
	Tr	Pyr	
2950	50	Sd, a/a	BTM up sample
	30	Sh, med-dk gy, occ grnish gy	
	20	Sh, red brn, lt grnish gy, a/a	
	Tr	Lst, wh-pnk, mod hd-hd	
	Tr	Pyr	



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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PAGE 1 OF 1**CONVENTIONAL CORE DESCRIPTION**

FIELD Sleipner WELL NO. 15/9-11 AREA North Sea
CORE NO. 2 INTERVAL from 2370 to 2379 CORED 9m REC. 3m 33 %
FORM Lista Fm GEOLOGIST R. Nyland DATE 10.10.81

DEPTH	LITHOLOGY/ GRAIN SIZE mu si vf f m c vc	DIP (apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.
			STAIN			CUT			FLUOR					
			S	F	G	P	F	G	P	F	G			
2370													Shale interbd w/ stringers of sandstone	
2371													Sh: dk gy-grn gy (bl gy), frm-mod hd, fiss, non calc	
2372													Sst: qtz, clr-wh, vf-f, v hd, subang- subrnd, sil cem, occ sl calc, occ sl in Sst	Tr of fluor
2373													micromic, glauc, no vis por	- No cut
2374													*) <u>Remarks</u> Except for the sandy intervals (stringers) the core is completely splintered, and is therefore impossible to measure	
2375														
2376														
2377														
2378														
2379														

mu si vf f m c vc
→

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CONVENTIONAL CORE DESCRIPTION

FIELD Sleipner WELL NO. 15/9-11 AREA North Sea
CORE NO. 3 INTERVAL from 2395m to 2406m CORED 11m REC 11m 100%
FORM. Heimdal Fm. GEOLOGIST R. Nylend DATE 12.10.81.

DEPTH	LITHOLOGY/ GRAIN SIZE	DIP (Apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.	
			STAIN			CUT			FLUOR						
			S	F	G	P	F	G	P	F	G				
2395	mu si vf f m c vc													Homogeneous, lt gy sandstone	
2396														Sst: clr qtz, vf-f, No fluor fri, subang-subrnd, No cut mod-well srtd, occ sl calc, tr of pyr, lign & glauc good vis por (smells of hydrocarbon)	
2397															
2398															
2399															
2400															
2401															
2402															
2403															
2404															
2405															
2406															

Broken to pieces

mu si vf f m c vc

[illegible]

2406					Homogenous, lt gy, sandstone	
2407					Sst, clr qtz, vf-f fri, subang-subrnd mod-well srted, occ sl calc, Tr: pyr, lign & glauc, good vis por	No fluor No cut Smells of hydrocarb
2408						
2409						
2410						
2411					Colour of Sst grding from lt gy to med- dk gy downwards	
2412						
2413						
2414						
2415						
2416					2415.8-2416.2m: Sst. lt gy, clr qtz, vf-med, v hd, sil cem, ang-rnd conglomeratic, poor srted, poor por	
2417						



CONVENTIONAL CORE DESCRIPTION

FIELD	Sleipner	WELL NO.	15/9-11	AREA	North Sea
CORE NO.	5	INTERVAL from	2424m to 2429m	CORED	5m
FORM.	Heimdal Fm.	GEOLOGIST	R. Nylend	REC	5m
				DATE	13.10.81

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CONVENTIONAL CORE DESCRIPTION

FIELD Sleipner WELL NO. 15/9-11 AREA North Sea
CORE NO. 6 INTERVAL from 2430m to 2449m CORED 19m REC 13 m 72 %
FORM. Heimdal Fm. GEOLOGIST R. Nylend DATE 14.10.81

DEPTH	LITHOLOGY/ GRAIN SIZE	DIP (apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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CONVENTIONAL CORE DESCRIPTION

FIELD Sleipner WELL NO. 15/9-11 AREA North Sea
CORE NO. 7 INTERVAL from 2449m to 2464m CORED 15m REC 8.5 m 57 %
FORM. Heimdal Fm. GEOLOGIST R. Nylend DATE 15.10.81.

DEPTH	LITHOLOGY/ GRAIN SIZE	DIP (apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.
			STAIN			CUT			FLUOR					
			S	F	G	P	F	G	P	F	G			
2449	mu si vf f m c vc												Sst:lt gy-med gy, clr qtz, fri-v lse, subang-subrnd, mod-well srtd, occ sl calc, Tr: pyr, glauc & lign. Good vis por The sandstone gets progressively looser towards the bottom of the interval. The lowermost part is in fact a very loose sand.	No fluor No cut No smell of HC
2450														
2451														
2452														
2453														
2454														
2455														
2456														
2457														
2458														
2464	mu si vf f m c vc													



CONVENTIONAL CORE DESCRIPTION

FIELD <u>Sleipner</u>	WELL NO. <u>15/9-11</u>	AREA <u>North Sea</u>
CORE NO. <u>8</u>	INTERVAL from <u>2464m</u> to <u>2473m</u>	CORED <u>9m</u>
FORM. <u>Heimdal fm</u>	GEOLOGIST <u>J.M. Østby/S.Bierkenes</u>	REC <u>-</u>
	DATE <u>15.10.81</u>	<u>0 %</u>

[illegible]



FIELD	Sleipner	WELL NO.	15/9-11	AREA	North Sea
CORE NO.	9	INTERVAL from	2473	to	2492m
		CORED	18.5	REC	18.5
					100 %
FORM.	Heimdal Fm.	GEOLOGIST	M. Østby/S. Bjerkenes	DATE	16.10.81.

DEPTH	LITHOLOGY/ GRAIN SIZE	DIP (apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.
			STAIN			CUT			FLUOR					
			S	F	G	P	F	G	P	F	G			
2473	mu si vf f m c vc												Sd/Sst: clr qtz, occ lt yel-lt reddish, transp, f-med, fri, subang- subrnd, fair vis por, fair-good srtd, non calc, occ micromic Tr of Rock Frag f-vf, occ crs Tr of pyr	No shows
2474														
2475														
2476														
2477														
2478	mu si vf f m c vc													

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CONVENTIONAL CORE DESCRIPTION

FIELD Sleipner WELL NO. 15/9-11 AREA North Sea
CORE NO. 9 INTERVAL from 2473m to 2492m CORED 18.5 REC 18.5 100 %
FORM. Heimdal Fm. GEOLOGIST M. Østby / S. Bjerkenes DATE 16.10.81

DEPTH	LITHOLOGY/ GRAIN SIZE	dP (apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.		
			STAIN			CUT			FLUOR							
			S	F	G	P	F	G	P	F	G					
2479	mu si vf f m c vc													Sd/Sst; clr qtz, occ lt yel-lt reddish, transp, f-med, fri, sub- ang-subrnd, fair vis por, fair- good srtd, non calc, occ micro- mic Tr of rock frag f-vf, occ crs Tr pyr	No shows	
2480																
2481															Sd/Sst; a/a, occ calc cmt	
2482																
2483																
2484																

mu si vf f m c vc
1 1 1 1 1 1 1



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CONVENTIONAL CORE DESCRIPTION

FIELD Sleipner WELL NO. 15/9-11 AREA North Sea
CORE NO. 9 INTERVAL from 2473m to 2492m CORED 18.5 REC 18.5 100 %
FORM. Heimdal Fm. GEOLOGIST M. Østby/S. Bjerkenes DATE 16.10.81.

DEPTH	LITHOLOGY/ GRAIN SIZE mu si vf f m c vc	DIP (apparent)	SHOWS									Φ P F G	LITHOLOGIC DESCRIPTION	MISC.		
			STAIN			CUT			FLUOR							
			S	F	G	P	F	G	P	F	G					
2484															Sd/Sst: clr qtz, occ lt yel-lt reddish, transp, f-med, fri, sub- ang-subrnd, fair vis por, fair- good srtd, non calc, occ micromic Tr of rock frag f-vf, occ crs Tr pyr	No shows
2485																
2486																
2487	«««													Sd/Sst:a/a, occ calc cmt		
2488																
2489																

mu si vf f m c vc
→



CONVENTIONAL CORE DESCRIPTION

FIELD	Sleipner	WELL NO.	15/9-11	AREA	North Sea
CORE NO.	10	INTERVAL from	2492m	to	2506m
		CORED	14.0m	REC	13.1m
FORM.	Heimdal Fm.	GEOLOGIST	M. Østby/S. Bjerkenes	DATE	16.10.81.

DEPTH	LITHOLOGY/ GRAIN SIZE	DIP (apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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CONVENTIONAL CORE DESCRIPTION

FIELD	Sleipner	WELL NO.	15/9-11	AREA	North Sea
CORE NO.	10	INTERVAL from	2492m	to	2506m
		CORED	14m	REC	13.1
					93.6%
FORM.	Heimdal Fm.	GEOLOGIST	M. Østby / S. Bjerkenes	DATE	16.10.81.

DEPTH	LITHOLOGY/ GRAIN SIZE	DIP (apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.		
			STAIN			CUT			FLUOR							
			S	F	G	P	F	G	P	F	G					
2498	mu si vf f m c vc														Sst: clr qtz, lt reddish, transp, f-med, subang-subrnd, occ crs, occ v crs, rnd, fri-mod hd, non calc, fair srted, poor-fair vis por, micromic, occ rock frag	No shows
2499	««															
2500																
2501																
2502																
														</		



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CONVENTIONAL CORE DESCRIPTION

FIELD Sleipner WELL NO. 15/9-11 AREA Norway, North Sea
 CORE NO. 10 INTERVAL from 2492m to 2506m CORED 14m REC 13.1m 93.6%
 FORM. Heimdal Fm. GEOLOGIST M. Østby/S. Bjerkenes DATE 16.10.81.

DEPTH	LITHOLOGY/ GRAIN SIZE mu si vf f m c vc	DIP (apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.		
			STAIN			CUT			FLUOR							
			S	F	G	P	F	G	P	F	G				P	F
2503															Sst: clr qtz, lt reddish, transp, f-med, subang-subrnd, occ crs, rnd, fri-mod hd, non calc, fair srtd, poor-fair vis por, micromic, occ rock frag	No shows
2504																
2505															Sh: dk gry, frm-mod hd, micromic, occ sl carb, occ micropyr, slty in parts, non calc	
															Sst: a/a	
2506																

mu si vf f m c vc



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CONVENTIONAL CORE DESCRIPTION

FIELD Sleipner WELL NO. 15/9-11 AREA North Sea
CORE NO. 11 INTERVAL from 2506m to 2514m CORED 8m REC 7.5m 93.8 %
FORM. Heimdal fm. GEOLOGIST M. Østby/S. Bjerkenes DATE 17.10.81.

DEPTH	LITHOLOGY/ GRAIN SIZE mu si vf f m c vc	DIP (apparent)	SHOWS									Φ	LITHOLOGIC DESCRIPTION	MISC.
			STAIN			CUT			FLUOR					
			S	F	G	P	F	G	P	F	G			
2506													Sh: dk gry, frm-mod hd, micromic, occ sl carb, non calc Sst: clr-wh qtz, vf-f, subang-subrnd fri-mod hd-hd, fair-good srtd, poor vis por, sl micac sl glauc, calc-v calc, Tr rock frag, Tr pyr	No shows
2507													Sh: bluish gry, mod hd, micromic, v calc with Sst-layers: Sst a/a	
2508													Sst: v calc, mod hd-hd, else a/a Sh: a/a	
2509														
2510													Sst: clr-wh qtz, f occ med, subang-subrnd, poor vis por, fair srtd, calc, glauc, v micac, mod hd Sh: med-dk bluish gry, mod hd, micromic, v calc, sl carb Sst: f, hd, micac, v poor vis por, calc cmt, Tr of rock frag, else a/a	
2511													Sh: a/a	

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mu si vf f m c vc
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SIDEWALL CORE DESCRIPTION

COUNTRY: Norway	AREA: North Sea	FIELD: Sleipner
WELL NO.: 15/9-11	RUN NO.: 1	INTERVAL: 2170.5 - 2526.0m
CO ORDINATES: 58 ° 24 ' 2.53 " N ;	01 ° 53 ' 41.79 " E	
K.B.E.: 25 meters	COMPANY: Statoil/Esso/Norsk Hydro	
HOLE SIZE: 12 1/4"	GEOLOGIST: R.M. Larsen/S. Bjerkenes	DATE: 22.10.81.

DEPTH	REC. %	LITHOLOGIC DESCRIPTION	POROSITY	SHOWS
2170.5	100	Cly, lt grnish gry, sft, micromic, pyr		
2175.6	0			
2183.0	90	Cly, lt grnish gry, sft, micromic, loc calc cmt pbls, hd		
2187.5	75	Cly, dk grnish gry, sft-frm		
2300.8	75	Cly, dk-med gry, frm,		
2309.5	75	Cly/Clyst, dk grnish gry, sft, loc frm-hd		
2318.0	90	Cly/Clyst, dk grnish gry, frm,		
2330.0	60	Clyst/Sh, lt grnish gry, subfiss, frm, sl calc		
2334.0	50	Clyst/Sh, med-dk grnish gry, subfiss, frm, non calc		
2337.0	90	Cly, med gryish brn, sft, non calc, plstic		
2342.3	50	Clyst, med grnish gry, blk, frm, loc hd, non calc		
2349.7	75	Sst, lt gry, f-vf, subang-subrnd, fair srt, d, lse, clr-lt gry, transl qtz, occ lt brnish, mush-kaol, Tr glauc	Poor	No shows
2352.0	80	Sst, lt gry, vf, subang-subrnd, fair srt, d, lse, clr-lt gry transl qtz, loc lt brnish argl, musc-kaol (wh-clr), Tr lign	Poor	No shows
2361.1	75	Sst, lt gry, a/a, lam w/Clyst, dk gryish brn, frm, org rich w/lign-coal, musc	No-poor	No shows
2382.3	80	Clyst, med gry, subfiss-blk, frm, non calc		
2383.5	70	Clyst, a/a		
2386.7	40	Sst, lt gry, vf-f, subang-subrnd, fair srt, d, lse, clr-lt gry, transl qtz, sl argl, sl musc- kaol	Fair-poor	No shows
2387.4	50	Sst, lt gry, dom f, else a/a	Fair	No shows

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SIDEWALL CORE DESCRIPTION

COUNTRY: Norway AREA: North Sea FIELD: Sleipner
WELL NO.: 15/9-11 RUN NO.: 2 INTERVAL: 2610 - 2943 m
CO ORDINATES: 58 ° 24 ' 2.53 " N ; 01 ° 53 ' 41.79 " E
K. B. E.: 25 meters COMPANY: Statoil/Esso/Norsk Hydro
HOLE SIZE: 8 1/2 " GEOLOGIST: A. Storli DATE: 2.11.81.

DEPTH	REC. %	LITHOLOGIC DESCRIPTION	POROSITY	SHOWS
2610	35	Lst, lt gry-pnk, frm-hd, sl argil-argil		
2635	50	Lst, lt brn-pnk, frm- mod hd, argil w/shale lamina		
2665	50	Lst, lt gry, frm-hd, v argil, grding to mrl		
2672	50	Lst, lt brn-pnk, frm-hd, argil, microglauconitic		
2678	0			
2680.5	60	Lst, grn gry-lt gry, hd-frm, v argil, v.v. glauconitic, micac (muskovite and biotite)		
2688	50	Lst/Mrl, lt gry-grn gry, frm-hd, v argil, v.v. glauconitic, micac		
2696	60	Mrl, med gry, sft-frm, micac, sl glauc		
2701	30	Mrl, lt grn gy, sft, sl micromic, stky		
2707	60	Lst/Mrl, lt grn gry, sft-frm, v glauc, micac, v argil		
2712	50	Lst/Mrl, lt gry-lt grn gry, frm, micromic		
2715	70	Mrl, lt gry, sft-frm, micromic		
2721	40	Mrl, grn gry, frm, glauc, micac		
2730	0			
2734	25	Mrl, lt gry-grn gry, sft-frm, glauc, micac		
2734	50	Mrl, lt gry-lt grn gry, sft-frm, glauc, micac		
2738	50	Mrl, lt gry-lt grn gry, sft-frm, glauc, micac		
2743	50	Mrl/Sh, med dk gry, frm, glauc, micac		
2747	40	Sh, red brn, frm, v calc, micromic		
2751.2	70	Sh, red brn, a/a		
2753	70	Sh, dk gry, gry blk, frm, sl calc, micromic		


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SIDEWALL CORE DESCRIPTION

COUNTRY:	Norway	AREA:	North Sea	FIELD:	Sleipner
WELL NO:	15/9-11	RUN NO:	2	INTERVAL:	2610 - 2943 m
CO ORDINATES:	58° 24' 2.53" N ; 01° 53' 41.79" E				
K.B.E.:	25 meters	COMPANY:	Statoil/Esso/Norsk Hydro		
HOLE SIZE:	8 1/2"	GEOLOGIST:	A. Storli	DATE:	2.11.81.

DEPTH	REC. %	LITHOLOGIC DESCRIPTION	POROSITY	SHOWS
2755	100	Sh, dk gry, gry blk, frm, sl calc, sl slty micromic		
2760	0			
2765	100	Sh, dk gry, gry blk, a/a		
2771	0			
2777	75	Sh/Siltst, dk gry, frm, sl calc, v glauc		
2782	100	Sh, dk gry, frm, sl calc, v micacslty		
2786.5	100	Sh, dk gry, a/a		
2788.6	100	Sh, dk gry, gry blk, a/a		
2790.5	30	Sst, lt gry, vf-med, subang, fri, argil	Poor	
2792	60	Sh/Siltst, med gry-brn gry, frm, non calc micromic		
2794.5	100	Sh, med gry-brn gry, frm, v pyritic, non calc		
2795.8	40	Sst, clr qtz, f-med, occ crs, subang, lse		
2798	20	Sst, a/a, but also subrnd, occ sl calc cmt		
2802	20	Sst, a/a, occ kaol/calc cmt, fri		
2806	0			
2807	60	Sst, clr qtz, f-med, subang-subrnd, fri, else occ sl calc and kaol cmt	Fair	
2807.8	0			
2809	0			
2809.5	50	Sst, clr qtz, f-med, subang, fri-lse, a/a	Fair - good	
2812	0			
2816	30	Sst, clr qtz, f-med, occ crs, else a/a	Good	Weak spotted, fluor
2818	20	Sst, a/a, w Tr pyr	Good	

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Page 3 of 3**SIDEWALL CORE DESCRIPTION**

COUNTRY:	Norway	AREA:	North Sea	FIELD:	Sleipner
WELL NO.:	15/9-11	RUN NO.:	2	INTERVAL:	2610 - 2943m
CO ORDINATES:	58° 24' 2.53" N ; 01° 53' 41.79" E				
K. B. E.:	25 meters	COMPANY:	Statoil/Esso/Norsk Hydro		
HOLE SIZE:	8 1/2"	GEOLOGIST:	A. Storli	DATE:	2.11.81.

DEPTH	REC. %	LITHOLOGIC DESCRIPTION	POROSITY	SHOWS
2820	20	Sst, clr qtz, f-med, occ vf, fri-lse, sl kaol cmt, subang	Good	Dull yel. fluor lt yel cut, good shows
2823	40	Sst, clr qtz, f-med, fri-lse, sl kaol cmt, subang, sl argil	good	a/a
2825	25	Sst, a/a	Good - fair	weak fluc good cut good shows
2827	25	Sst, a/a	a/a	a/a
2829	40	Sst, clr qtz, wh, vf-f, fri frm, calc, kaol cmt (wh cmt) subang	fair	no fluor good cut
2831.5	0			
2834	0			
2839.3	80	Sh, grn gry, sft frm, calc, micromic		
2852	90	Sh, lt gry-grn gry, frm, sl calc, v slty		
2863	75	Sh, a/a		
2875	0			
2875.5	95	Clyst/Sh, red brn, frm, calc, slty, occ sdy		
2896	80	Clyst/Sh, red brn, a/a		
2912	0			
2923	0			
2928	20	Sst, clr qtz, vf-med, frm, mod well srt, subang, kaol cmt	Fair	no shows
2943	70	Sh, dk gry, frm, non-sl calc slty		

III DRILLING REPORT

III - 1. SUMMERY

Well 15/9-11 was drilled into rocks of Triassic age to a total depth of 2950 m. The drilling was performed by "Ross Rig". The hole was spud at 0930 hrs the 18th of September 1981.

The main objective for this well was the Heimdal formation in the Paleocene. During drilling hydrocarbons in a Jurassic sandstones was discovered. The T.D. for the well was then extended from 2650 to 2950 m.

Three DST was performed. One in the Jurassic sandstone, and two in the Heimdal sandstone.

Apart from a strike that amounted to 22 days of lost operation, there was no severe problems during drilling and testing operation.

A total of 99 days (including the strike) was spent on this well, and the overall cost reported from the rig was around 71 million kroner (including the strike).

The rig left 15/9-11 the 23rd of December to start drilling the well 34/10-14.

III - 2. DRILLING OPERATION IN INTERVALS.

"Ross Rig" was transferred from well 7120/8-1 to well 15/9-11 at 1325 hrs 15th September 1981 (when passing 62 parallel). Well 15/9-11 was spudded at 0930 hrs 18th. September. The waterdepth was measured to 87,5 m.

The final position was: 58° 24' 02, 53" N
01° 53' 41, 79" E

36" hole, 112,5 - 174 m:

The 36" hole was drilled with a 26" bit and 36" hole-opener without temporary guide-base. Seawater was used with returns to sea floor. The hole was displaced with spud mud prior to POOH. The average rate of penetration was 6,2 m/hrs.

The hole was drilled to 175 m w/36" H.O. at 174 m. No problems were encountered while drilling this section.

Prior to spudding the 30" casing was made up with permanent guide-base and hung off in moon-pool. After the hole was drilled, a wiper trip was made and the hole was displaced with spud mud. The 30" casing was stabbed blind and cemented without any problems. After drilling out the shoe with 26" bit, the riser and pin connector were run and the diverter system installed. 1 deg and 20 hrs was used after spud.

26" hole, 174 - 585 m:

A 12 1/4" hole was drilled down to 465 m. After logging the hole was displaced w/seawater and observed. The hole was opened down to 235 m by use of a 17 1/2" bit w/26" underreamer. The holeopening assy. was then pulled due to a change in TD from 465 to 585 m. A 12 1/4" pilot hole was drilled to 585 m. The hole was then logged and flowchecked w/seawater. A 17 1/2" bit w/26" underreamer was used for holeopening. Two trips was needed to reach TD.

The hole was displaced with 1.25 SG mud. When POOH the 26" U.R. would not enter the pinconnector and the sting was disconnected 3.5 m above wellhead w/bit at 585 m. Pulled riser and pinconnector. Caught fish with over-shot dressed w/basket grapple and POOH. Performed wiper trip w/26" bit. Displaced hole w/1.25 S.G. mud.

The 20" casing was run and cemented with the shoe at 569 m.

BOP was run after 40 hrs repair work on same.

One day lost WOW. A total of 10 days since spud was used up to this point.

17 1/2" hole, 585 - 1176 m:

After drilling out the 20" casing shoe a leak off test were conducted at 588 m. The test showed a fracture gradient equivalent to 1.54 S.G. mudweight.

The 17 1/2" hole was drilled to 1176 m. The mud weight was raised to 1.12 S.G. during this interval. The section was logged and a wipertrip was conducted prior to run casing. The 13 3/8" casing was run and cemented with the shoe at 1159 m. Made two misruns when setting seal assy. Had to use bumper sub.

12 1/4" hole, 1176 - 2590 m:

After drilling out the 13 3/8" casing shoe a leak off test was conducted at 1179 m. The test showed a fracture gradient equivalent to 1.77 S.G. mudweight.

The hole was drilled down to 2364 m where the first core run was made. A 6 7/8" corebarrel with 8 15/32" corehead was used. After second core run the hole was reamed and drilled from 2379 to 2395 m. Cores were then cut down to 2514 m. A total of 11 cores was taken. Between core no. 6 and no. 7 ISF/SONIC-log was run. After 12 1/4" hole was drilled to 2590 m a complete logging program was performed. RFT measurement showed a maximum pore pressure of 1.05 S.G. at top of Heimdal sandstones (2387 m).

The mudweight was increased from 1.12 to 1.20 S.G. after leak off test at 13 3/8" csg. shoe was taken. Maximum applied mud weight was 1.23 S.G.

9 5/8" casing was run and cemented with the shoe at 2575 m.

8 1/2" hole, 2590 - 2950 m:

The hole was drilled to 2850 m. At this depth a complete logging program was performed. RFT measurement showed a maximum pore pressure of 1.1 S.G. in Jurassic sandstone. Then 8 1/2" hole was drilled to TD (2950 m). The hole was logged and a 7" liner was run with top at 2485 m and shoe at 2950 m.

After 7" liner was pressure- and swabbed tested the well was temporarily plugged back due to strike. A 120 m cmt plug was set from 2120 m to 2000 m. Hang off tool was installed and LMRP pulled. Rig on strike from 2230 hrs 7th November to 0600 hrs 22nd November. A total of 22 days was lost from the start of P&A to the rig was back at same place.

Three drill stem tests were performed before P&A plugs were set. Two tests in the Heimdal sandstones and one in the Jurassic sandstones.

"Ross Rig" departed location 15/9-11 at 0400 hrs 23rd of December 1981 to drill the well 34/10-14.

III. 3 - EXTRACT OF DAILY ACTIVITIES.

- 15.9. Rig under tow from well no 7120/8-1.
Arrived 62°N at 1325 hrs and the rig was transferred to well 15/9-11.
- 16.9. Under tow to well 15/9-11.
- 17.9. Arrived location 15/9-11. Dropped first anchor at 0900 hrs. Ran and tensioned all anchors to 180 ton.
- 18.9. Spudded in at 0930 hrs. Water depth 87,5 m. Drilled 36" hole from 112,5 - 174 m. displaced hole with 41 m³ spud mud. Took survey. Made wiper trip to 122 m. Pumped 43 m³ spud mud. POOH. Ran 30" casing (shoe at 174 m).
- 19.9. Cemented 30" casing. RIH w/26" bit. Tagged cement at 170 m. Drilled cement, shoe and 3 m new hole to 177 m. POOH. Ran pin connector and riser. Installed diverter.
- 20.9. RIH w/12 1/4" bit to wellhead. POOH due to bad weather. Unlatched riser. WOW for 23 hrs.
- 21.9. Latched on riser. RIH w/12 1/4" bit to 177 m. Displaced hole with gel mud. Drilled 12 1/4" pilot-hole to 465 m. Took survey. Made wiper trip to 30" shoe. POOH. Ran ISF/SONIC/GR.
- 22.9. RIH w/12 1/4" bit to 465 m. Displaced hole with seawater. Observed well for 30 min. - ok. Displaced hole with 1.10 S.G. mud. POOH. RIH w/17 1/2" bit and 26" underreamer. Opened 12 1/4" pilothole to 26" from 177 to 235 m. POOH. RIH w/12 1/4" bit. Drilled pilothole from 465 to 585 m. Took survey. Made wiper trip to 235 m. POOH.
- 23.9. Ran ISF/SONIC/GR. RIH w/12 1/4" bit to 585 m. Displaced hole w/sea water. Observed well for 30 min. - ok. Displaced hole w/1.10 S.G. mud. POOH. RIH w/17 1/2" bit and 26" underreamer to 174 m. Reamed to 235 m. Opened 12 1/4" hole to 26" from 235 to 433 m. Standpipe pressure dropped from 172 to 137 bar. thereafter to 110 bar. POOH. Found washout in center nozzle on bit.

- 24.9. RIH w/underreamer. Reamed from 403 to 433 m. and opened pilothole down to 585 m. Displaced hole w/1.25 S.G. mud. POOH. Unable to pull 26" under-reamer into riser. RIH to 585 m and backed off string 3,5 m above wellhead. Made several attempts to unlatch riser before it came loose. Pulled riser.
- 25.9. RIH w/113/8" overshot with 6 3/8" basket grapple. Attempted to catch fish - negative. POOH and changed guide. RIH and caught fish. POOH w/fish. RIH w/26" bit. Reamed from 560 to 585 m. Displaced hole w/1.25 S.G. mud. POOH - no drag. Ran and landed 20" casing (shoe at 569 m).
- 26.9. Cemented casing. Prepared to run BOP-stack. Tested stack on yellow pod - ok. Attempted to test stack on blue pod - no success.
- 27.9. Worked on BOP-stack to locate failure in blue pod. Found failure.
- 28.9. Ran and landed BOP-stack, tested same - ok. RIH w/17 1/2" bit. Tagged cement at 554 m. Drilled cement, float, shoe and 3 m new hole to 588 m. Performed leak off test equivalent to 1.54 S.G. Drilled to 674 m.
- 29.9. Took survey. Made wiper trip to 20" shoe. Max. 13.6 ton overpull. Drilled 17 1/2" hole from 674 to 818 m. Flowline plugged off with clay several times. Circulated. Drilled to 1984 m.
- 30.9. Drilled 17 1/2" hole to 1169 m. Circulated hole clean. Took survey. Made wiper trip to 20" shoe. Reamed from 1110 to 1169 m. Drilled to 1176 m. Circulated hole clean. Max gas 5,1 %. POOH. Ran logs. Made clean up trip w/17 1/2" bit.
- 1.10. Cont. to circ. and condition mud. POOH. Ran 13 3/8" csg, shoe at 1159 m. Rigged up chocks and circ, mud prior to cement. Cemented casing. Float did not hold back pressure. WOC for 3 1/2 hrs. Bled off surface pressure and got no back flow. Backed out running tool and POOH. Washed BOP and wellhead w/jetting tool. POOH w/same.

- 2.10. RIH and tried to set seal assy twice - no success. Picked up bumper sub and bumped seal assy. Tested BOP on blue pod - ok. Tested 13 3/8" csg to 172 bar for 30 min. - ok. Ran and set wearbushing. Tested kelly cocks, kelly hoses and standpipe manifold - ok. L/D old BHA and P/U new. Made up hang off tool and landing string. RIH. Hit obstruction at 1092 m. Dumped cmt. contaminated mud in returns while circ. Recorded SPR.
- 3.10. Cont. to record SPR. Drilled cmt, float and shoe. Dumped cmt. contaminated mud from returns below shoe. Drilled 12 1/4" hole from 1176 to 1179 m. Performed leak off test eq. to 1,77 sp.gr. Raised mudweight from 1,12 to 1,2. Drilled 12 1/4" hole to 1438 m. Survey depths: 1260 m, 1355 m. Had max. 18 mt. overpull during short trip from 1361 m.
- 4.10. Drilled 12 1/4" hole from 1438 to 1738 m. Had tight hole problems in this section. Max overpull: 41 mt. Survey depths: 1449 m, 1544 m, 1638 m and 1732 m.
- 5.10. Cont. to drill 12 1/4" hole to 1993 m. Still tight hole problems. Max overpull: 41 mt. Survey depths: 1825, 1919 m.
- 6.10. Drilled 12 1/4" hole to 2127 m. POOH to change BHA. RIH to shoe, slip and cut drlg. line. RIH. Drilled to 2130m. Cond. mud. Reamed off ledge at 2127m. Drilled 12 1/4" hole to 2143 m.
- 7.10. Drilled down to 2262 m. Picked up hang off tool and inside BOP. Landed same in wellhead (bit at 1955 m). Closed MPR and SR after disconnecting. WOW for 10 1/2" hrs.
- 8.10. Checked for press. and reconnected DP. Checked for press. below inside BOP - negative. Circ. bttm up. Functiontested rams on both pods - ok. RIH to 2262 m. Drilled 12 1/4" hole to 2354 m. Dropped survey at 2262 and 2364 m. Changed screens on shakers from 60/60 to 80/80 mesh to improve sampling. POOH.

- 9.10. Cont. POOH to 1819 m. Tight hole - worked string and circ. bttm. up. POOH. RIH w/core barrel. Dropped ball and took core no. 1 from 2364 to 2370 m. POOH. All cores cut with 8 15/32" corehead. RIH w/combination running and testing tool to retrieve wearbushing.
- 10.10. Retrieved wearbushing. Set b 11 weevil test tool and tested BOP - ok. POOH w/test tool and reset wearbushing. RIH w/corebarrel, circ. and conditioned mud, and cut core no. 2 from 2370 to 2379 m. CBBL jammed. POOH.
- 11.10. Cont. POOH w/CBBL. RIH w/12 1/4" bit + junk basket. Reamed the cored section from 2364 to 2379 m. Drilled to 2395 m. Circ. bttm up and POOH. RIH w/CBBL and cut core no. 3 from 2395 to 2404 m.
- 12.10. Cont. to cut core no. 3 to 2406 m. Could not get back to bttm. after connection and POOH. RIH w/CBBL and took core no. 4 from 2406 to 2424 m. POOH. RIH w/CBBL. Reamed from 2419 m.
- 13.10. Reamed to TD. Cored to 2449 w/CBBL no. 5 and no. 6. POOH w/CBBL no. 6.
- 14.10. Recovered core no. 6. Ran schlumberger log ISF/SONIC. Cut core no. 7 from 2449 to 2464 m. RIH w/CBBL to cut core no. 8. Reamed from 2453 m.
- 15.10. Reamed to TD. Cored to 2492 m with core no. 8 and no. 9. RIH to cut core no. 10.
- 16.10. Cont. RIH. Cut core no. 10 and no. 11 to 2514 m. POOH.
- 17.10. Recovered core no. 11. Retrieved wearbushing. Ran boll weevil test plug and tested BOP - ok. Retrieved test tool and reset wearbushing. RIH and reamed from 2395 to 2511 m.
- 18.10. Cont. to ream to 2514 m. Circ. and dropped survey. POOH. RIH w/12 1/4" bit and drilled to 2547 m. POOH to 1130 m. Installed hang off tool and inside BOP, and hung off in wellhead.

- 19.10. POOH w/hang off tool and bit. RIH w/new bit and drilled to 2590 m. Circ. for geological samples.
- 20.10. Made wiper trip to csg. shoe. 1 m fill
Dropped survey and POOH. Ran schlumberger logs
no. 1 - ISF/SONIC/GR, no. 2 - FDC/CNL/GR, no. 3 -
HDT, no. 4 - DLL/MSFL. Rih to 13 3/8" csg. shoe.
Worked on heave comp.
- 21.10. Cont. RIH to TD. Reamed last 20 m. Circ. and POOH.
Ran schlumberger logs no. 5 - RFT/GR, no. 6 - RFT/GR,
no. 7 - CST.
- 22.10. Cont. log run no. 7. Ran no. 8 - CBL/VDL.
RIH w/bit and junk basket for clean up trip.
Retrieved wearbushing. Ran 9 5/8" casing.
- 23.10. Cont. to run 9 5/8" casing. Cemented same.
Lost partly to full returns during cmt. job.
Washed wellhead area. Set seal assy.
RIH w/boll weevil test tool and tested BOP - ok.
Retrieved test tool. Press tested 9 5/8" csg to 331
bar against SR - ok. Made up 6 1/2" BHA.
- 24.10. Cont. to make up 6 1/2" BHA. RIH and tagged cmt.
at 2336 m. Drilled top plug + cmt. down to 2328 m.
Crew on strike for 4 hrs.
Cont. to drill cmt. to 2557 m. Tested csg to 331 bar.
Recorded slow pump rates w/circ. head and w/kelly
installed. Drilled out cmt. and new formation to
2591 m.
- 25.10. Drilled 8 1/2" hole to 2593 m. Circ. and performed
leak off test: eq to 1,84 S.G.
Drilled to 2652 m. Circ. bttm. up, recorded slow
pump rates, dropped survey, and POOH.
RIH w/new bit and drilled to 2655 m.
- 26.10. Drilled 8 1/2" hole to 2679 m. Dropped survey and
POOH. RIH w/new bit and drilled to 2705 m.
- 27.10. Drilled to 2745 m. Dropped survey and POOH due to
high torque and metal cuttings coming over shakers.
Changed 1 stnd. of HWDP with 1 stnd 6 1/2" DC.
RIH w/new bit. Drilled 8 1/2" hole from 2745 to
2758 m.
- 28.10. Drilled 8 1/2" hole from 2758 to 2848 m.
Flowchecked at 2796, 2804 and 2820 m, due to drilling
breaks - neg.

- 29.10. Cont. to drill 8 1/2" hole to 2850 m.
Mud weight increased to 1,25 while drilling.
Dropped survey, wipertripped to csg. shoe, and POOH.
Ran schlumberger logs: no. 1 - ISF/SONIC/GR,
no. 2 - FDC/CNL/GR, no. 3 - HDT/GR, no. 4 - DLL/
MSFL/GR.
- 30.10. Ran schlumberger log: no. 5 - SSL.
RIH and drilled from 2850 to 2913 m.
- 31.10. Drilled 8 1/2" hole to 2950 m. Circ. bttm up and
dropped survey. Picked up hang off tool and inside
BOP and hung off in wellhead (bit at 9 5/8" csg. shoe).
WOW for 3 hrs. POOH w/hang off tool. RIH to TD -
no fill. Circ. bttm up and POOH. Ran schlumberger
logs: no. 1 - ISF/SONIC/GR, no. 2 - FDC/CNL/GR.
- 1.11. Cont. logging: no. 2 - FDC/CNL/GR, no. 3 - RFT/GR,
no. 4 - RFT/GR, no. 5 - CST/GR, no. 6 - CST/GR,
no 7 - CBL/VDL.
- 2.11. Finished logging. Took a clean up trip - had some
tight spots. Picked up and ran 7" liner. Dropped
ball and set hanger w/103 bar. Pumped out seat
w/165,5 bar. Liner top at 2485 m, shoe at 2950 m.
- 3.11. Backed out running string and set weight on same.
Cemented 7" liner. Bumped plug in landing collar
w/172 bar. POOH and l/D running tool. Tested BOP
on yellow pod - ok. Retrieved test plug and reran
wearbushing. RIH w/8 1/2" bit + csg scraper.
Tagged liner top at 2485 m - had no indication of cmt.
POOH. Closed SR and tested 9 5/8" csg /7" liner lap -
no success. Picked up RTTS packer, safety jnt and
RTTS circ. calve. RIH w/same to locate leak.
- 4.11. Cont. RIH. Set packer above liner lap at 2461 m.
Established injection rate. Squeezed off 3,2 m³ cmt.
Final squeeze pressure 324 bar. Unset packer,
pulled 2 std, and rev. circ. POOH. RIH w/8 1/2"
bit + 9 5/8" casing scraper. Tagged cmt at 2466 m
and drilled out same to 2485 m. Tested 9 5/8" csg
and 7" liner lap to 345 bar - ok. POOH m/u
6" bit + 7" scraper. RIH. Drilled cmt, flapper
valve and plugholder. RIH and tagged cmt at 2900 m.
- 5.11. Drilled out cmt to 2915 m. Tested 7" csg to 345 bar
- ok. POOH. Performed dry test on the liner lap
w/65,5 bar diff. - ok. RIH w/6" bit + 7" scraper
to 2480 m. Circulated while WOO due to strike.

- 6.11. Circ. w/WOO due to strike for 10 hrs. RIH w/open ended DP and laid a balanced cement plug from 2120 to 2000 m. POOH. RIH and tagged cmt. at 1992 m. Dressed down to 2000 m. Prep. to land DP in wellhead.
- 7.11. Installed hang off tool and RIH w/same. Hung off with bit at 1943 m. Disconnected landing string. Closed MPR and SR. Locked wedgelocks. WOO for 10 1/2 hrs due to strike. Pulled riser and LMRP. Rig on strike from 2230 hrs 7.11.81.
- 8.11. - 21.11.81 - Rig on strike.
- 22.11. Waited for crew to arrive on the rig for 14 hrs. Repaired LMRP to be run, changed AX ring. Waited for sufficient crew to arrive on the rig to run LMRP/riser.
- 23.11. Cont. waiting for crew. Ran LMRP/riser. Not able to reconnect due to weather conditions. WOW for 12 1/2 hrs.
- 24.11. WOW.
- 25.11. WOW for 12 1/2 hrs. Reconnected LMRP. Pulltested same w/22,6 tons overpull - ok. Tested choke manifold, found leak and rep. same. Displaced riser w/mud. Checked for pressure below MPR - ok. Tested UAP against csg - no success - had leak in LMRP conn. area. Tested LAP - ok. Hung off in wellhead. Displaced riser w/sea water, closed SR. Function tested LMRP conn. Reconnected drillstring. Tested UAP - no success. Tested LAP - ok. Backed out of hang off string and POOH. Closed SR and MPR. Disconnected riser and pulled same.
- 26.11. Cont. to pull LMRP. Changed AX-ring. Tested connector on test stump - ok. Mantis inspected BOP top. Function tested both pods and connector - ok. Ran LMRP and riser. Pulltested w/22 tons - ok. Tested kill line to 517 bar - ok. Reconnected drillstring after open SR. Tested LMRP against UAP to 172 bar - ok. Tested choke line - ok. Displaced riser w/1,27 mud. Retrieved hang off tool w/81 tons overpull, 1/d hang off tool and RIH. Tagged cmt at 2000 m. Circ. and POOH.

- 27.11. Pulled wearbushing and ran test plug. Tested BOP - ok. Retrieved test plug and set wearbushing. Made dummy run with white paited slickjnt. in BOP. RIH w/8 1/2" bit + junk sub. Drilled and washed cmt. from 2000 to 2161 m. Cont. RIH to 2473 m and cleaned down to liner top at 2484 m.
- 28.11. Circ. at liner top. POOH. Picked up teststring equipment. RIH w/tubing and press tested same.
- 29.11. Cont. RIH w/tubing a total of 80 stnds. and tested to 345 bar - ok. POOH. RIH w/7" and 9 5/8" csg scraper spaced out to liner top w/9 5/8" and 2950m w/ 7". Circ. POOH. Schlumberger perforated interval 2797 - 2807 m for first DST.- misfire.
- 30.11. Reperforated test interval. Gun lost in hole when perforated. RIH w/junkbasket to 2795 m - ok. RIH w/test assy. Tested same when RIH - ok.
- 1.12. Cont. pressure testing of equipment prior to first DST. Opened well for DST - no. 1.
- 2.12. Cont. DST no. 1. Bullheaded, circulated and POOH w/test string.
- 3.12. Cont. POOH w/teststring and L/D test assy. RIH w/6" bit and 7" csg scraper to 2856 m for clean up. POOH. Schlumberger ran: no. 1 - gauge ring and junkbasket, no. 2 - EZSV-retainer at 2792 m. RIH w/stinger and tagged retainer.
- 4.12. Squeezed off perfs and laid some cmt. on top of retainer. POOH. RIH open ended and set cmt. plug from 2540 to 2430 m. POOH. Retrieved wearbushing and set testplug. Tested BOP - ok. Pulled testplug and reran wearbushing. RIH w/8 1/2" bit + csg scraper.
- 5.12. RIH and tagged cmt plug at 2450 m. Perforated for isolation squeeze at 2432 m. Ran junkbasket and gauge ring prior to run RTTS packer on DP. RIH and established injection through perfs.

- 6.12. Squeezed cmt. through perfs at 2432 m. POOH and L/D. BHA. RIH w/8 1/2" bit and 9 5/8" csg scraper. Tagged cmt at 2428 m and drilled out cmt to 2433 m. RIH to 2450 m. Circ and cut mud weight back from 1,27 S.G. to 1,15 S.G. POOH. Ran Schlumberger: no. 1 - CBL, no. 2 - perforated for DST, no. 2 interval 2432 - 2440 m. Started to RIH w/test string.
- 7.12. Cont. RIH w/teststring. Pressuretested all test equipment - ok. Opened well for DST no. 2 (5 hrs flow).
- 8.12. Cont. DST no. 2 (5 hrs flow, 19 hrs shut in).
- 9.12. Cont. shut in period on DST no. 2. Bullheaded, circulated and POOH with teststring. RIH w/8 1/2" bit + 9 5/8" csg. scraper.
- 10.12. Cont. RIH w/8 1/2" bit + 9 5/8" csg scraper. Circ. and cond. mud. POOH. Ran junkbasket and gauge ring. Set EZSV retainer at 2428 m - pulled off wire in weak point. Fished out w/overshot. RIH w/stinger and rigged up surface lines. Established injection.
- 11.12. Squeezed off test perfs. at 2432 - 2440 m. Final press: 241 bars, stung out of retainer, circ. and POOH. RIH w/8 1/2" bit + 9 5/8" csg. scraper. Tagged cmt. at 2425 m. Drilled cmt. to 2427 m. Circ. prior to POOH. Retrieved wearbushing and set test plug. Tested BOP - ok. Pulled test plug and reran wearbushing. Perforated interval 2415 - 2395 m for DST no 3. Started to make up test string.
- 12.12. Cont. to M/U and RIH w/test assy. and test string. Pressure tested according to Statoils procedures. Waited on daylight for 8 hrs.
- 13.12. Cont. WO daylight for 3 hrs. Set packer displaced test string and opened for DST no. 3 (flowed for 14 1/2 hrs).
- 14.12. Cont. DST no. 3 (2 hrs flow, 16 hrs shut in, 6 hrs flow).
- 15.12. Cont. DST no. 3 (6 hrs flow, 8 hrs shut in). Bullheaded, circulated and POOH.

- 16.12. Cont. POOH w/teststring. RIH w/8 1/2" bit + 9 5/8" csg scraper to 2420 m. Circ. and POOH Ran schlumberger: no. 1 - junkbasket and gauge ring, no. 2 - 9 5/8" EZSV retainer, set same at 2390 m. RIH w/stinger and squeezed 4,8 m³ cmt. through perfs. Laid 0,8 m³ top of retainer.
- 17.12. Rev. circulated and POOH.L/D tubing. Perf. at 300 m w/ 1-11/16" csg gun under press. control. Press dropped from 34 to 14 bar.
- 18.12. Retrieved wearbushing.M/U and RIH w/cutting assy. Cut 9 5/8" csg at 655 m and POOH w/same by use of spear. RIH and tagged 9 5/8" csg at 655 m. POOH. RIH w/open ended DP to 700 m and set a cmt plug. Perforated at 390 m under pressure control. Pressure dropped from 34 to 10 bar. Ran junk basket and gauge ring to 370 m. Set EZSV retainer at 365 m.
- 19.12. RIH w/stinger. Attempted to establish injection - no success. M/U and RIH w/13 3/8" csg cutter and cut csg at 238 m. POOH w/same by use of spear. RIH w/17 1/2" bit to 238 m. Circulated and POOH RIH w/openended DP to 360 m and set a cmt. plug. L/D 120 jnts of DP.
- 20.12. WOW to pull BOP.
- 21.12. WOW for 9 hrs to pull BOP. Pulled BOP. P/U and RIH w/cutter assy.
- 22.12. Cut 20" x 30" csg at 120 m. Jumped mantis and inspected wellhead when 20" x 30" csg was pulled Inspected seabed. Pulled anchors. Last anchor on bolster at 0400 hrs 23.12.81.

III

4. WELL AND

SUBSEA SCHEMATIC

III 4 WELLBORE SCHEMATIC 15/9-II

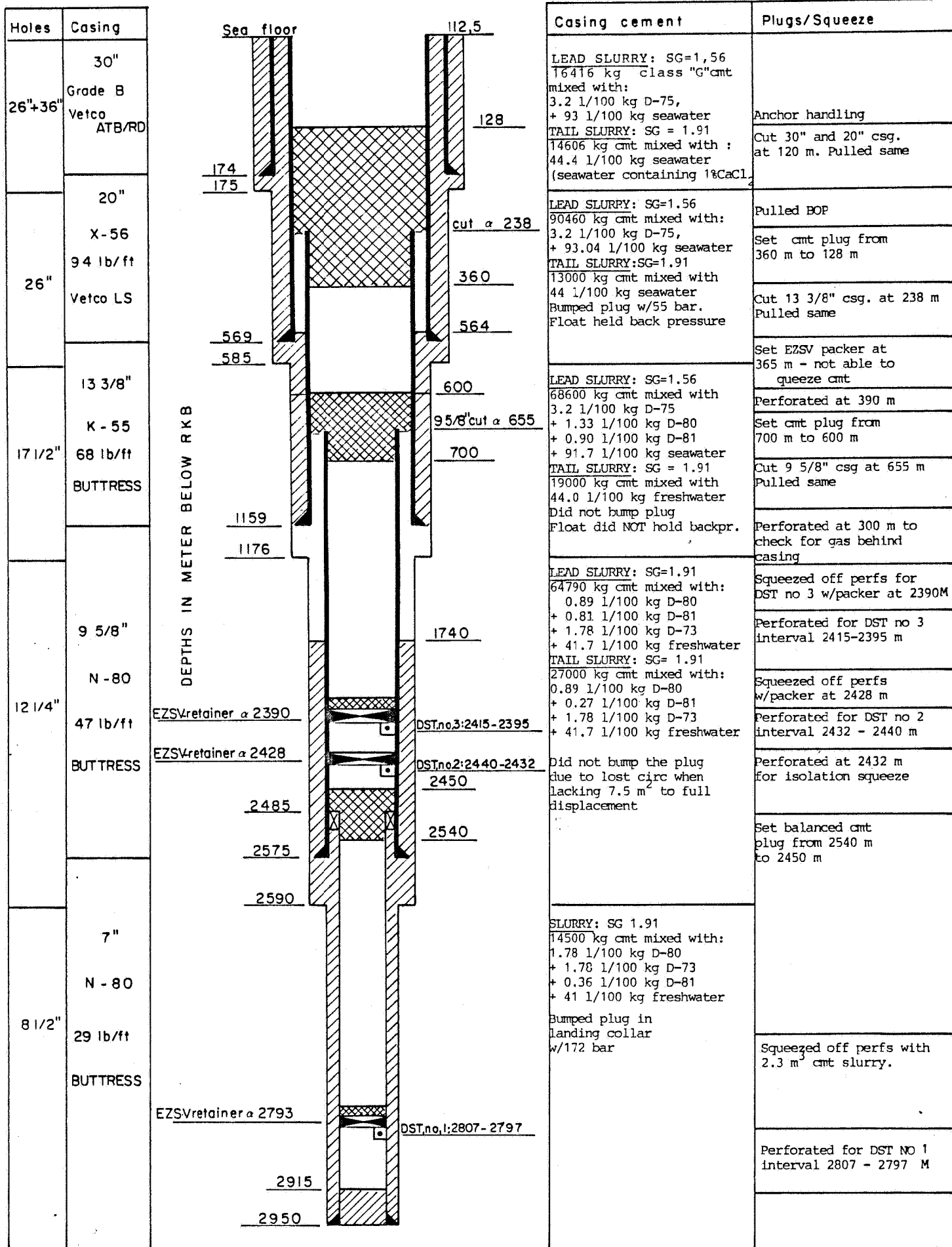


Original av: MF
Tegnet av: AM
Dato: 24-6-82

(NOT TO SCALE)

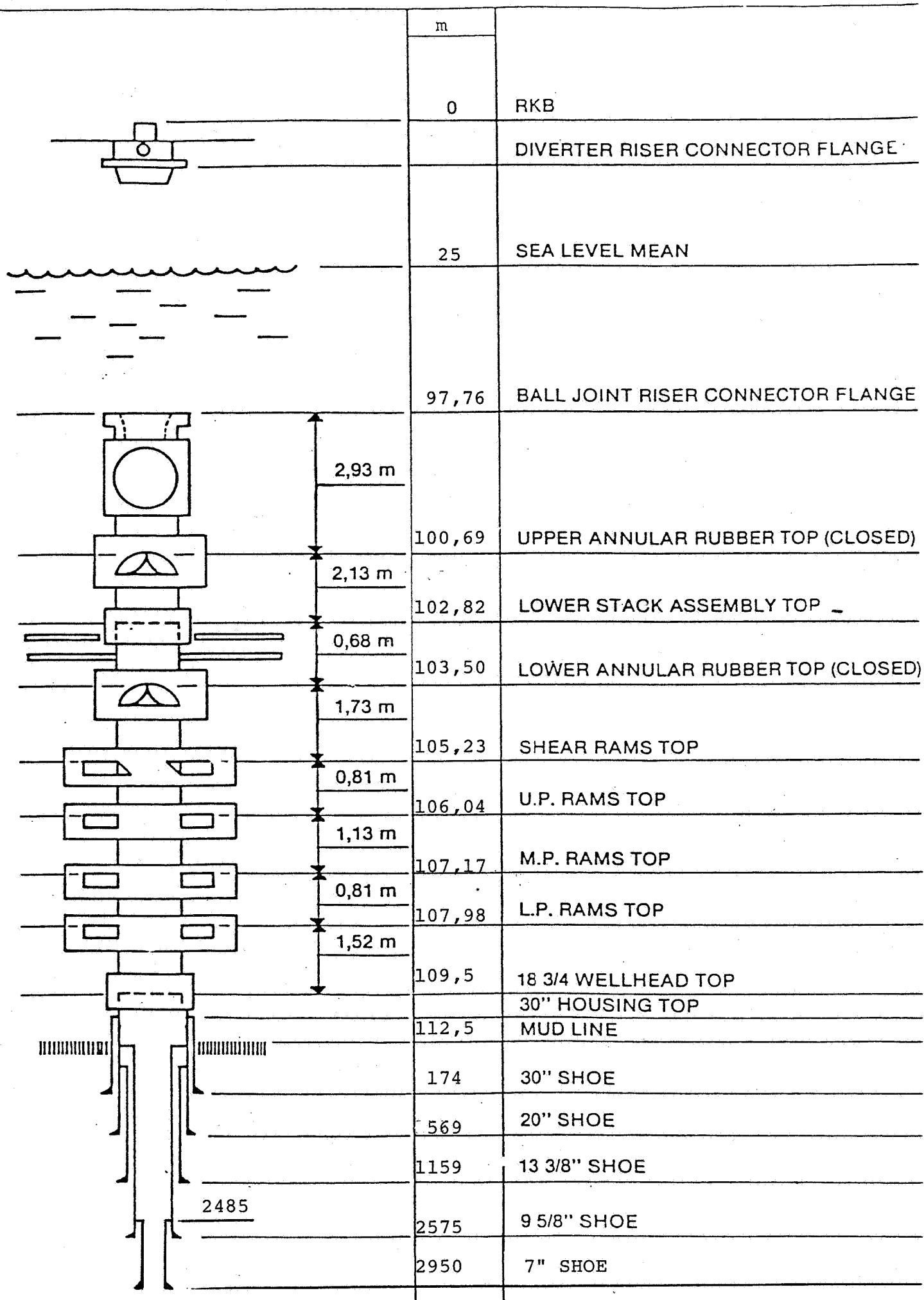
RKB - MSL : 25 m.

WATER DEPTH: 87.5m



ROSS RIG SUBSEA ASSEMBLY

WELL 15/9-11



III

5. FORMATION

INTEGRITY TESTS

N O M E N C L A T U R E

Brønn no	= Well no
Dybde	= Depth, m
Foring	= Casing
Fartøy	= Rig name
Høyde	= Hight, m
Over vannfl.	= Above sea level
Over sjøb.	= Above sea floor
Tyngde	= Weight
Maks. trykk	= Max pressure
Boreslam	= Mud
Tetthet	= Density, S. G.
Vis	= Funnel Viscosity, sec/qt.
P. V.	= Plastic Viscosity, cps.
Y. P.	= Yield Point, lbs/100 sq.ft.
Filt	= Filtrate, cc's/30 min.
Gel	= Gel, lbs/100 sq.ft.
Kapasitet	= Capasity
Vol/tidsenhet	= Liters/min.
Tilb.str.	= Returns, liters
Antatt styrke	= Predicted formation strength, S. G.
Obs.spr.trykk	= Surface pressure at leak off, bar
Ekv.formasj.styrke	= Formation integrity (Leak off) S. G.
Volum	= Volume, liters
Trykk	= Pressure, bar
Anmerkninger	= Comments

**statoil****FORMASJONSSTYRKETEST**

Dato: 29.9.81

Brønn nr.: 15/9 - 11 Dybde: Brønn: 585 m Foring: 569 m Test: Leak-off

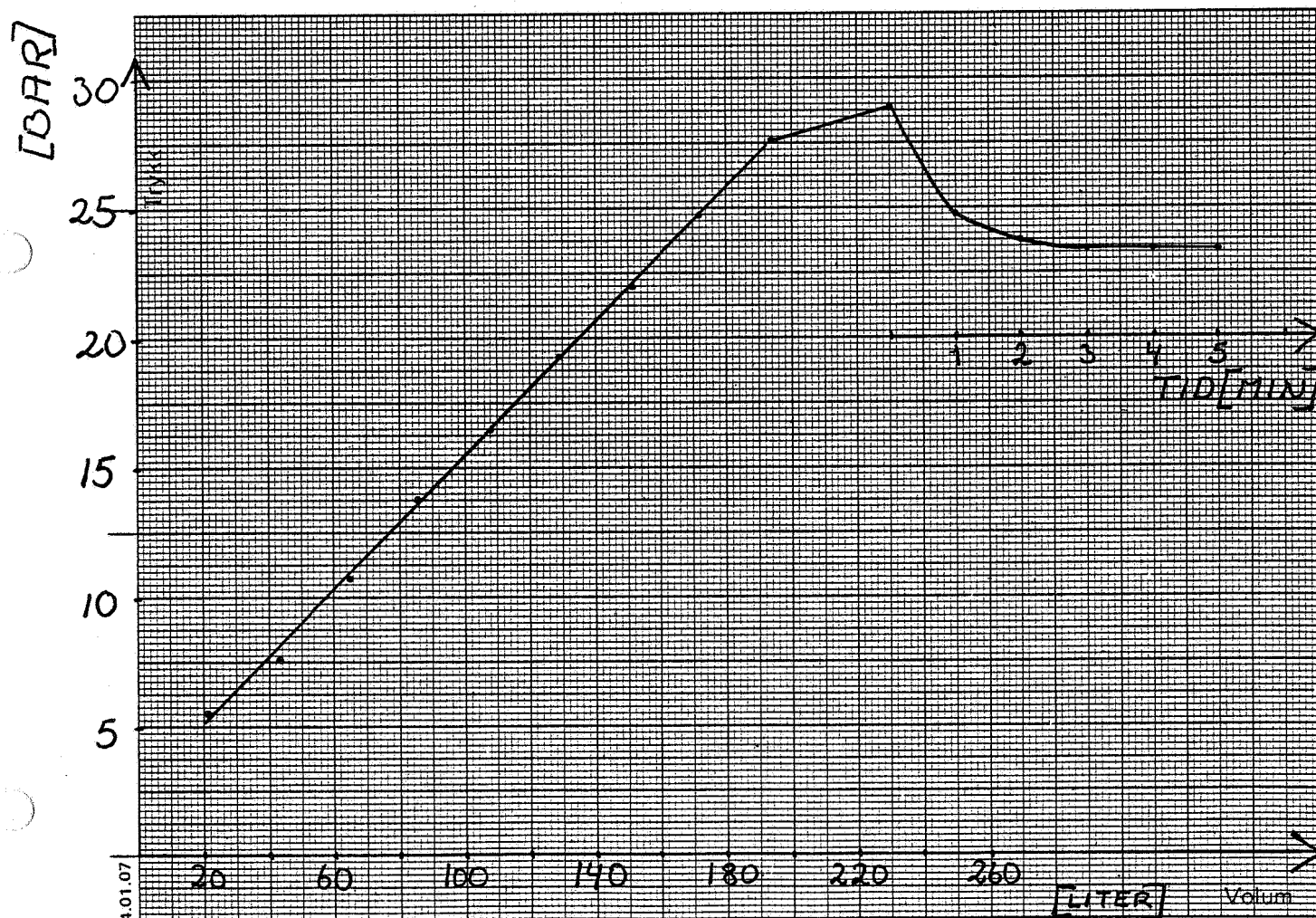
Fartøy: Ross Rig Høyde R.K.B.: Over vannfl.: 25 m Over sjøb.: 110,5 m

Foring: Diam.: 20" Tyngde: 94 lb/ft Grad: x-56 Maks. trykk: 55 bar
4016/ 25 cc/ 24/30 lb/
Boreslam: Tetthet: 1,05 sp.gr. Vis: 57 sec P.V.: 11 cps Y.P.: 100 ft² Filt: 30 min Gel.: 100 ft²
4,31 ltr/

Pumpe: Type: Dowell Kapasitet: strike/vol./tidsenh.: 40 ltr/mic Tilb.str.: 1.54 sp.gr.

Antatt styrke: Obs. spr. trykk: Ekv. formasj. styrke:

litr	Bar	litr	Bar	Min	Bar	
Volum/tid	Trykk	Volum/tid	Trykk	Volum/tid	Trykk	Anmerkninger
21	5,5	194	27,6	0	28,9	
43	7,6	230	28,9	1	24,8	
65	10,7			2	23,7	
86	13,8			3	23,4	
108	16,5			4	23,4	
129	19,3			5	23,4	
151	22					Sign.:
172	24,8					





statoil

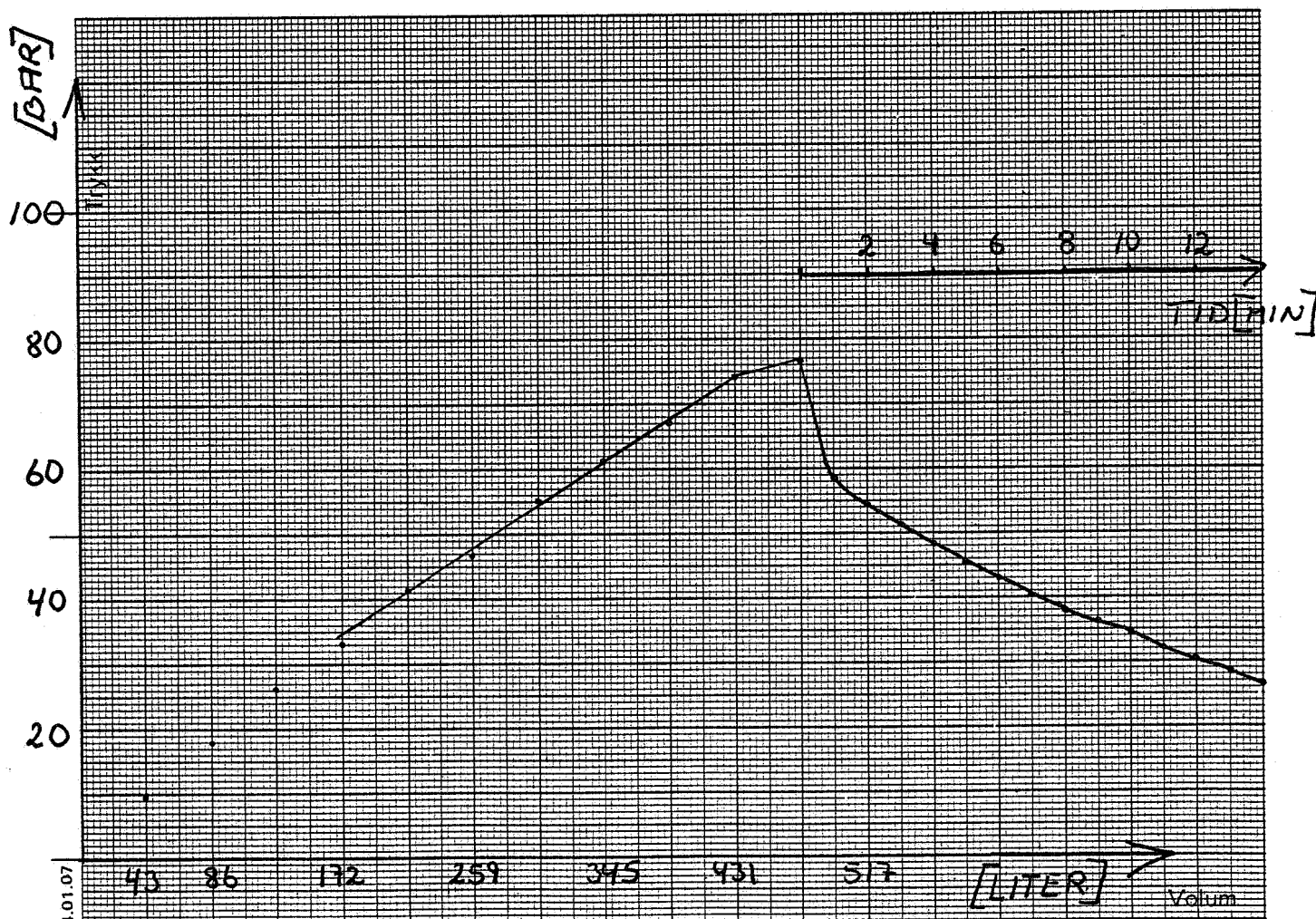
FORMASJONSSTYRKETEST

Dato: 3.10.81

Brønn nr.: 15/9 -11 Dybde: Brønn: 1179 Foring: 1159 Test: 1159
 Fartøy: Ross Rig Høyde R.K.B.: Over vannfl.: 25 Over sjøb.: 112,5
 Foring: Diam.: 13 3/8" Tyngde: 68 Us/Jt Grad: k - 55 Maks. trykk: 238 Bars
 Boreslam: Tetthet: 1,12 Vis: 46 P.V.: 9 Y.P.: 11 Filt: 14,6 Gel.: 12/26
 Pumpe: Type: Dowell Kapasitet: 4,31 l/strVol./tidsenh.: 70 Lom Tilb.str.: 159 L
 Antatt styrke: 1,7 Obs. spr. trykk: 74,14 Ekv. formasj. styrke: 1,77

Volum/tid	Trykk	Volum/tid	Trykk	Volum/tid	Trykk	Anmerkninger
43	9,66	388	67,24	6	43,10	Changed over to
86	17,93	431	74,14	7	40,34	read antoher gauge
129	26,21	474	75,86	8	37,93	at 259 LTRS pumped
172	33,10	1	58,62	9	36,21	(had two gauges
215	41,38	2	54,48	10	34,48	rigged up on Dowell).
259	46,90	3	51,03	11	32,07	
301	55,17	4	48,28	12	30,34	Sign.: .
345	61,38	5	45,52	13	28,62	

I4 26,55

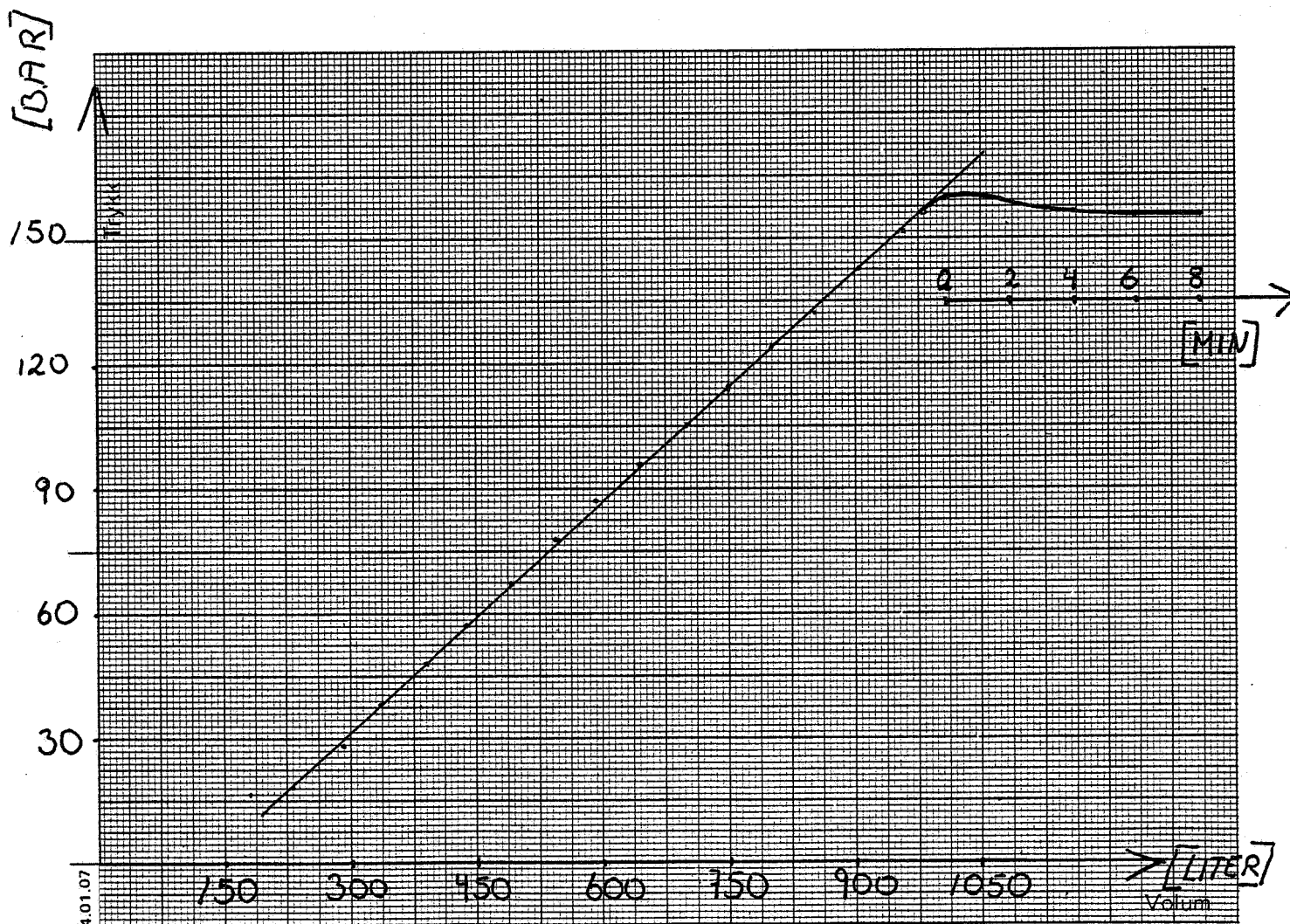


**statoil****FORMASJONSSTYRKETEST**

Dato: 25.10.81

Brønn nr.: 15/9 - 11 Dybde: Brønn: 2593 Foring: 2575 Test: _____
Fartøy: Ross Rig Høyde R.K.B.: Over vannfl.: 25 Over sjøb.: 112,5
Foring: Diam.: 9 5/8" Tyngde: 47 Us/ Grad: N-80 Maks. trykk: Yield pr 474
Boreslam: Tetthet: 1,22 Vis: 45 P.V.: 18 Y.P.: 14 Filt: 5,5 Gel.: 3/18
Pumpe: Type: DOWECC Kapasitet: 2,5854 str Vol./tidsenh.: 100 LPM Tilb.str.: 850 L
Antatt styrke: 1,8 Obs. spr. trykk: 156,55 Ekv. formasj. styrke: 1,84

Volum/tid	Trykk	Volum/tid	Trykk	Volum/tid	Trykk	Anmerkninger
180	16,55	594	86,90	982	156,55	Last 5 str.
232	18,62	646	96,55	1008	160,00	Indicated no.
284	28,28	698	105,52	0 min.	160,00	Pr. buildup.
336	37,93	749	114,48	2 min.	158,62	
388	48,38	801	124,14	4 min.	156,55	
439	57,24	853	132,76	6 min.	155,86	
491	66,90	904	142,76	8 min.	155,52	Sign.:
543	77,59	956	151,72	10 min.	155,17	



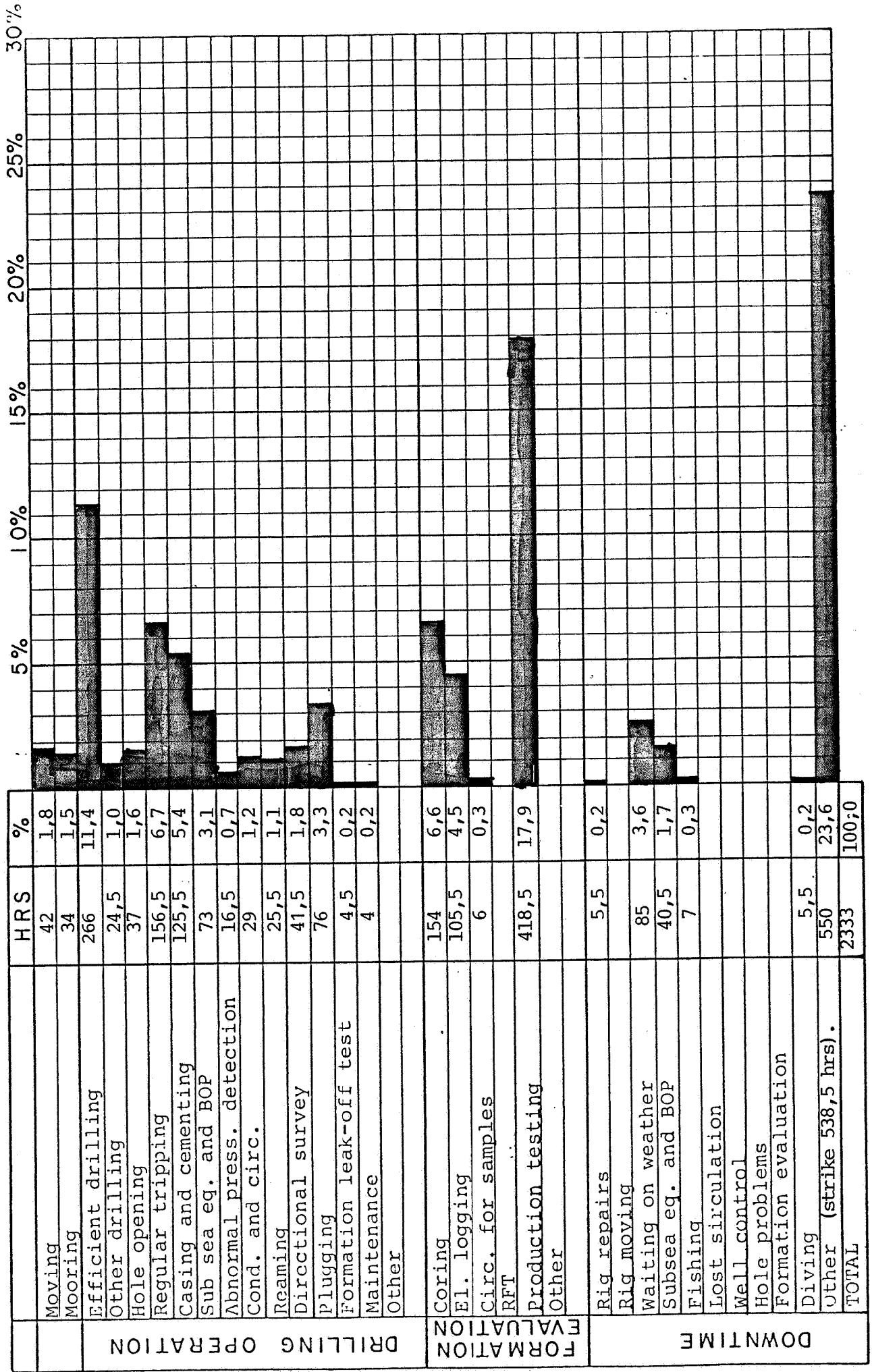
III 6. RIG TIME DRISTRIBUTION

DRILLING TIME VS. DEPTH

DRILLING COST VS. DEPTH

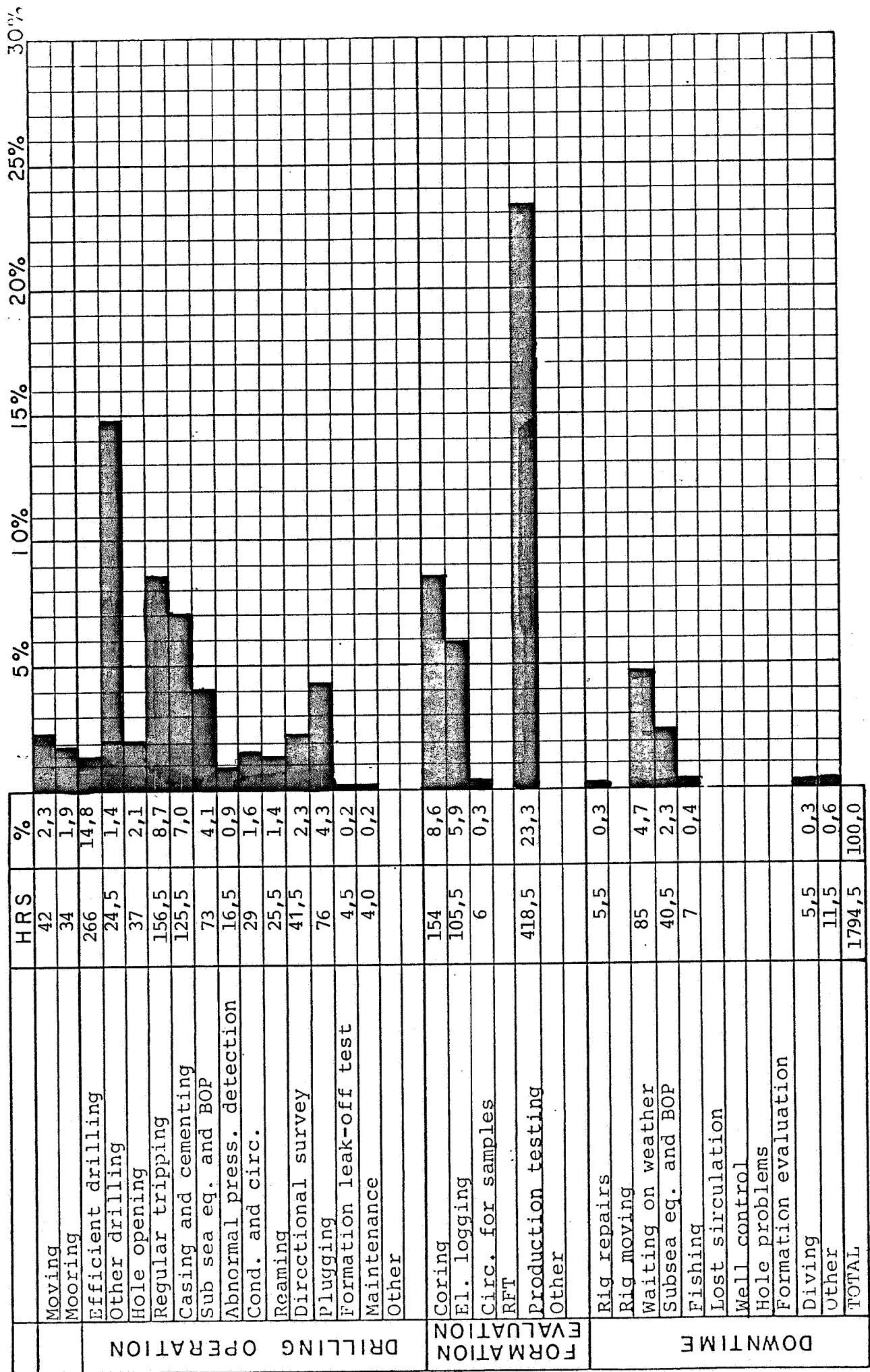
RIG TIME DISTRIBUTION FOR WELL 15/9 - 11.

STRIKE INCLUDED



RIG TIME DISTRIBUTION FOR WELL 15/9 - 11

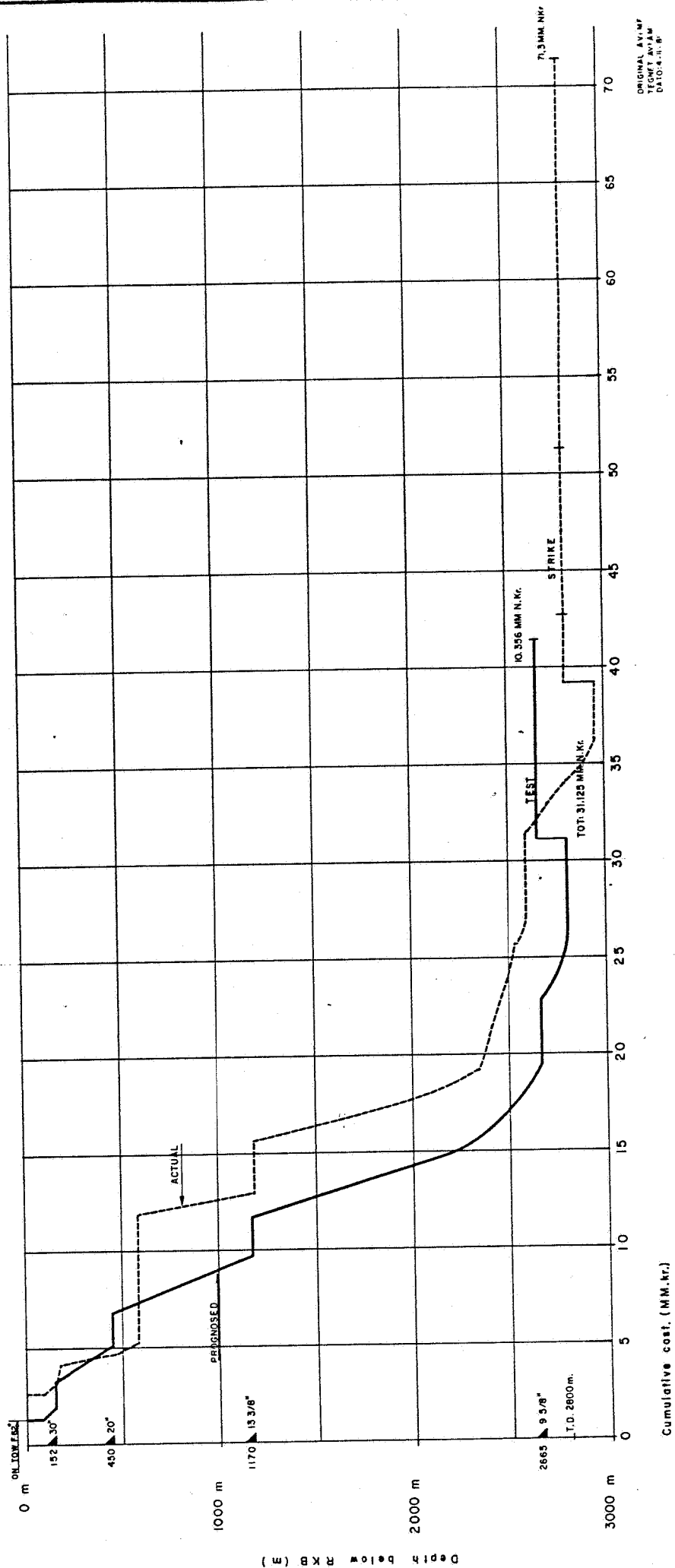
(STRIKE NOT INCLUDED)





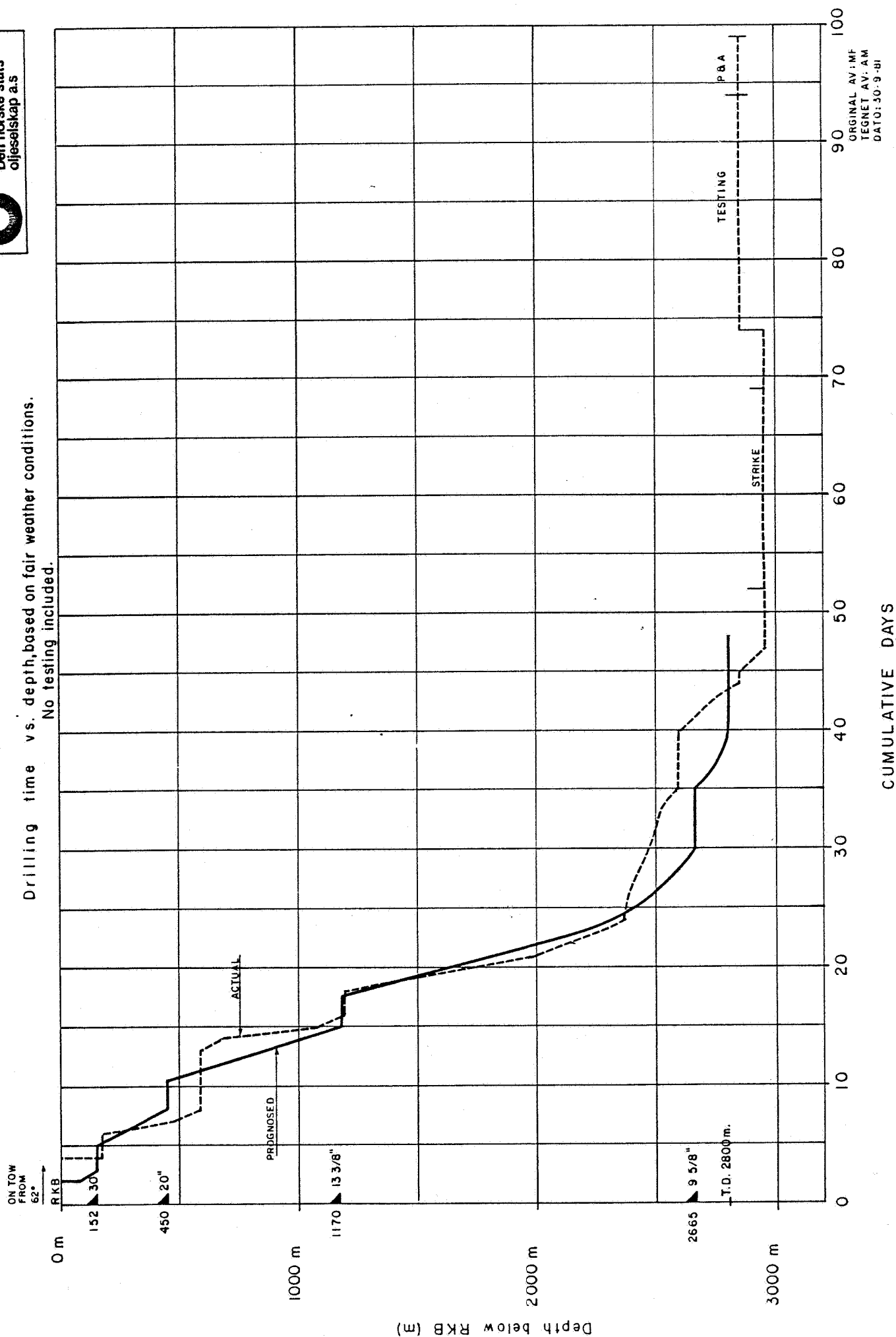
WELL 15/9-II RIG: ROSS RIG.

Drilling cost VS. depth.



WELL 15/9-II

Drilling time vs. depth, based on fair weather conditions.
No testing included.



III

7. BIT RECORD AND

LITHOLOGY COLUMN



BORKRONEDATA

Brønn nr.: 15/9-11

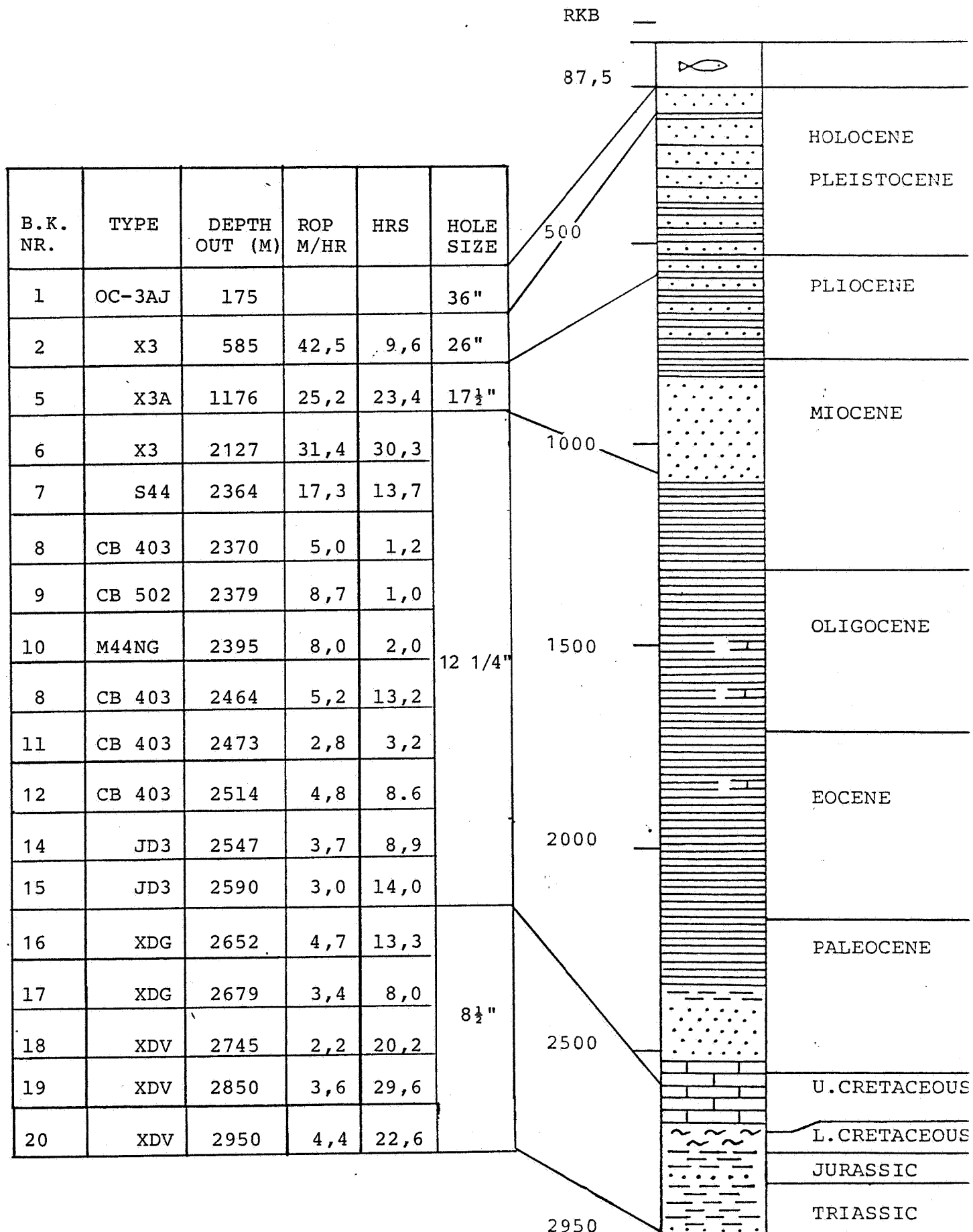
Nr.	B. k. Nr.	Diam.	Fabr.	Type	Serie no.	Dyser 1/32"	Dybde ut	Fremdrift	Rot. tid	Total rot.tid	Bore- hast.	V.p.b.	O.p.m.	Pumpe			Tilstand			Anmerkninger
														Trykk	V.grad	v/t	T	B	G	
1	1	26	htc	oc 3aj	hb 344	3x22	175	62,5												w/36" h.O.
2	1rr	26	htc	ocs3aj	hb 344	3x22	177	2	7	7		1-5	40-60	86		4100	2	2	1	
3	2	12 1/4	htc	x-3	642df	3x15	465	288	6,4		45,2	1-3	140	215		3395				
4	3	17 1/2	htc	osc3aj	819dl	4x16	235	used w/26" U.R.												
5	2rr	12 1/4	htc	x-3	642df	3x15	585	120	3,2	9,6	37,5	1-3	140	215	98	3395	2	4	1	Washed out sentre nozzle
6	3rr	17 1/2	htc	ocs3aj	850dl	4x16	433	used w/26" U.R.				1-3	120	165	98	4243				
7	4	17 1/2	htc	osc3aj	850dl	4x16	585	used w/26" U.R.				1-4	120	165	98	4243	2	3	1	
8	5	17 1/2	htc	x3a	232jc	3x18	1176	591	23,4	23,4	25,2	1-9	130 140/	215	98	4140	3	6	1	
9	6	12 1/4	htc	x3	542df	3x14	2127	951	30,3		31,4	9-14	150	207	98	2650	3	4	1	(Some) B.T. Middle row.
10	7	12 1/4	sec	s44		3x14	2364	237	13,7		17,3	11-16	140	212	98	2545	3	5	1	I.b.t.
11	8	8- 15/32	DB	cb403			2370	6	4,95		1,2	10-11,4	100							
12	9	15/32	DB	cb502			2379	9	8,7		1,0	8-11,7	108	35-59	98	982				
13	10	12 1/4 8-	sec	m44pg		3x14	2395	16	2		8,0	12,3	136	199	98	2324	3	4	1	2364- Reamed 2379
14	8 rr	15/32	DB	cb403			2406	11	4,15		2,7		88	50	98	982				10% worn
15	8 rr	15/32	DB	cb403			2424	19	4,05		4,4	4-11,7	88	56	98	961				10% worn
16	8 rr	15/32	DB	cb403			2430	6	2,6			9,7	59	62-64	98	982				Drilled through coke marker
17	8 rr	15/32	DB	cb403			2449	19	2,0			8,0	94	44-69	98	982				50% worn.
18	8 rr	15/32	DB	cb403			2464	15	0,4			2,3	90	48-53	98	961				
19	11	15/32	DB	cb403			2473	9	3,2			6,8	84	31-36	98	982				
20	12	15/32	DB	cb403			2492	19	0,8			2,9	68	45-48	98	901				



Brønn nr.: 15/9-11

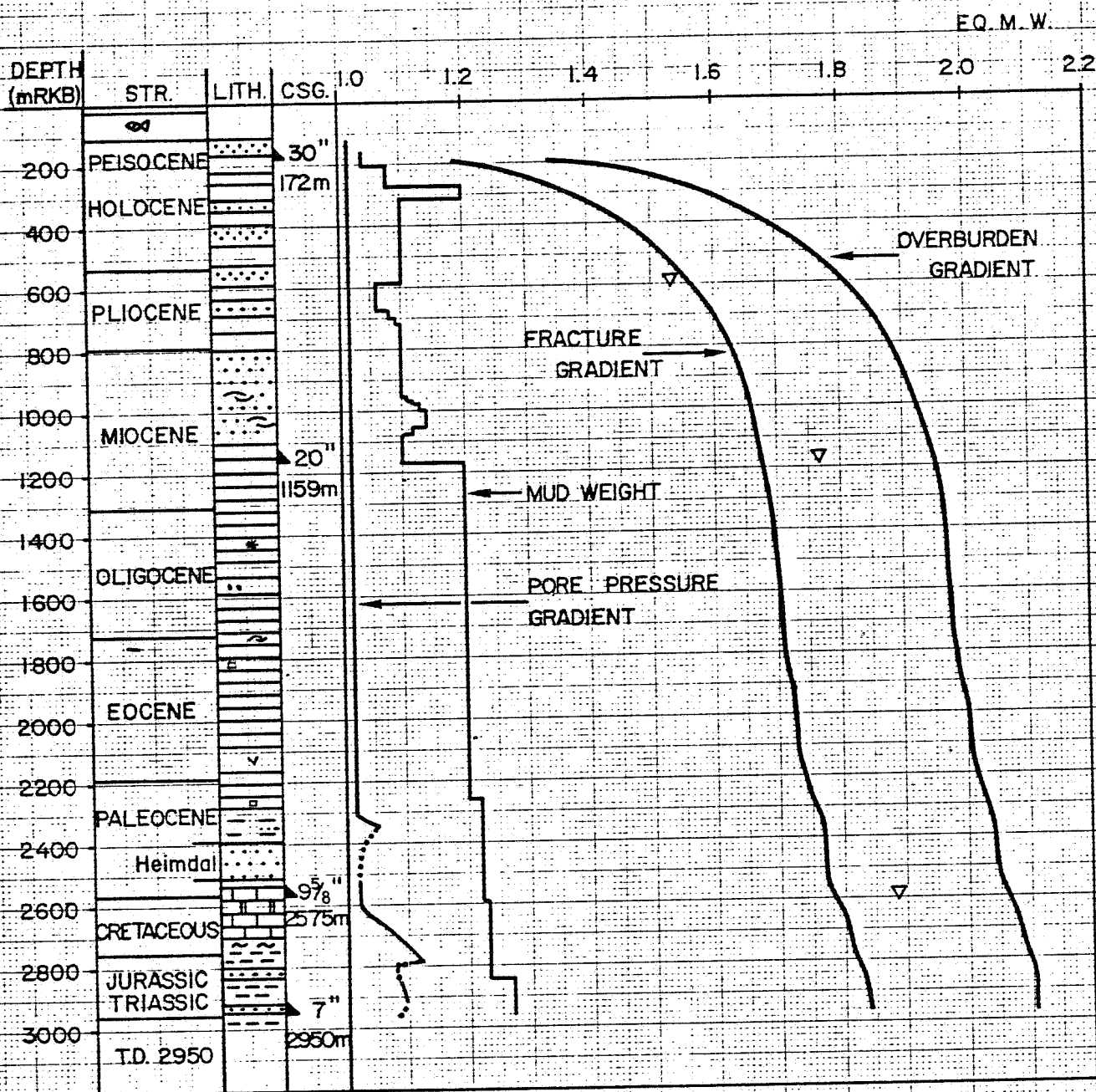
[illegible]

BIT SEQUENCE AND LITHOLOGY COLUMN 15/9-11



III 8. PRESSURE PROFILES

15/9-II PRESSURE GRADIENTS COMPOSITE PLOT



▽ Leak off tests

• RFT pressure points

III 9. SURVEY

EASTMAN WHIPSTOCK UK.LTD,NORWAY BRANCH

WELL DEFLECTION SURVEY

PAGE : 1

STATOIL
15-9-11
NORTH SEA, NORWEGIAN SECTORP.B.H.L : N O O E
SLOT : <UNASSIGNED>
WELL : 15-9-11
OUR REF : S04109.OST
LAST UPDATE : 08-JAN-81
DATE PRINTED : 08-JAN-82

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	VERTICAL DEPTH	VERTICAL SECTION	R E C T A N G U L A R C O O R D I N A T E S	T A R G E T DISTANCE	DIRECTION D M	DOGLEG SEVERITY
0.00	0 0	N 0 0 E	0.00	0.00	0.00	0.00 N	0.00	S 90 0 E	0.00
461.00	0 15	S 73 16 W	461.00	461.00	-0.29	0.29 S	1.01	N 73 16 E	0.02
581.00	0 15	N 50 44 W	120.00	581.00	-0.20	0.20 S	1.43	N 81 59 E	0.06
668.00	0 30	N 24 44 W	87.00	667.99	0.27	0.27 N	1.74	S 81 14 E	0.10
1163.00	1 0	S 58 44 E	495.00	1162.97	-0.01	0.01 S	1.07	N 89 13 W	0.09
1260.00	0 45	S 49 44 E	97.00	1259.96	-0.86	0.86 S	2.43	N 69 12 W	0.09
1355.00	0 45	S 66 44 E	95.00	1354.95	-1.51	1.51 S	3.65	N 65 31 W	0.07
1449.00	0 30	S 50 44 E	94.00	1448.95	-2.01	2.01 S	4.66	N 64 24 W	0.10
1544.00	1 30	S 32 44 E	95.00	1543.93	-3.32	3.32 S	6.17	N 57 25 W	0.33
1638.00	1 45	S 43 44 E	94.00	1637.90	-5.39	5.39 S	8.72	N 51 48 W	0.13
1732.00	1 30	S 40 44 E	94.00	1731.86	-7.36	7.36 S	11.36	N 49 36 W	0.08
1825.00	1 45	S 40 44 E	93.00	1824.82	-9.36	9.36 S	13.97	N 47 56 W	0.08
1919.00	1 30	S 15 44 E	94.00	1918.78	-11.63	11.63 S	16.46	N 45 1 W	0.24
2014.00	2 0	S 44 44 E	95.00	2013.74	-14.01	14.01 S	19.21	N 43 11 W	0.32
2121.00	2 15	S 2 44 E	107.00	2120.67	-17.43	17.43 S	22.71	N 39 52 W	0.43
2218.00	1 30	S 6 16 W	97.00	2217.62	-20.60	20.60 S	25.20	N 35 10 W	0.25
2312.00	1 30	S 13 16 W	94.00	2311.59	-23.02	23.02 S	26.99	N 31 29 W	0.06
2358.00	1 15	S 37 16 W	46.00	2357.58	-24.00	24.00 S	27.61	N 29 38 W	0.41
2508.00	1 15	S 69 16 W	150.00	2507.54	-25.88	25.88 S	28.18	N 23 16 W	0.14
2584.00	1 15	N 75 44 W	76.00	2583.52	-25.97	25.97 S	27.67	N 20 12 W	0.30
2646.00	1 45	S 75 16 W	62.00	2645.50	-26.05	26.05 S	27.24	N 17 2 W	0.43
2673.00	1 30	S 74 13 W	27.00	2672.49	-26.25	26.25 S	27.23	N 15 26 W	0.28
2738.00	2 15	S 67 16 W	65.00	2737.46	-26.97	26.97 S	27.48	N 11 1 W	0.36
2844.00	1 45	S 81 16 W	106.00	2843.39	-28.02	28.02 S	28.08	N 3 32 W	0.20
2944.00	1 0	S 82 16 W	100.00	2943.36	-28.37	28.37 S	28.38	N 1 18 E	0.22

EASTMAN WHIPSTOCK UK.LTD,NORWAY BRANCH

WELL DEFLECTION SURVEY

PAGE : 2

STATOIL
15-9-11

SLOT : <UNASSIGNED>

OUR REF : S04109.OST

WELL : 15-9-11

LAST UPDATE : 08-JAN-81

NORTH SEA, NORWEGIAN SECTORP.B.H.L : N O O E

DATE PRINTED : 08-JAN-82

MEASURED DEPTH	DRIFT ANGLE	DRIFT DIRECTION	COURSE LENGTH	VERTICAL DEPTH	VERTICAL SECTION	R E C T A N G U L A R C O O R D I N A T E S	T A R G E T D I S T A N C E	D O G L E G S E V E R I T Y
-------------------	----------------	--------------------	------------------	-------------------	---------------------	--	--------------------------------	--------------------------------

CALCULATION METHOD : MINIMUM CURVATURE

REPORT UNITS : METRES

SLOT COORDINATES : 0.00 N 0.00 E

BOTTOM HOLE LOCATION : REFERENCED TO CENTRE

DISTANCE : 28.38

DIRECTION : S 1 18 W

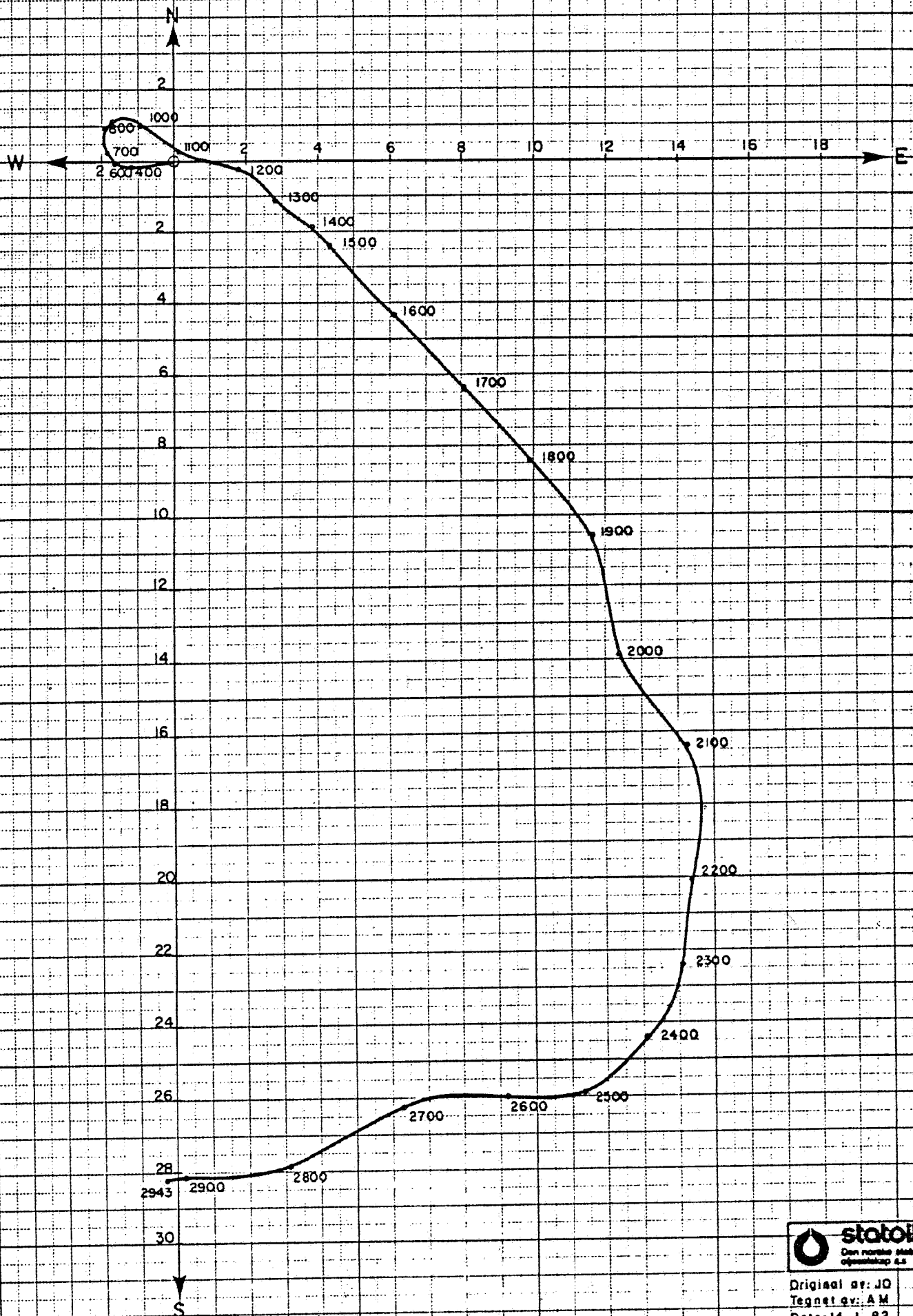
SURVEY RUN INFORMATION

=====

THE WELL IS ASSUMED VERTICAL 461 MT.MD,
MAGNETIC DECLINATION IS 6.74 DEG. WEST 08-JAN-82.
EASTMAN WHIPSTOCK MAGNETIC SINGLE SHOT 461-2944 MT.MD.

WELL 15/9-II

Horizontal projection of well track. Departure in meters.



Original av: JQ
Tegnet av: A M
Dato: 14-1-82

III 10. DRILLING FLUID
 SUMMERY

GENERAL SUMMARY

OPERATOR STATOIL

WELL NO. 15/9-11

OPERATOR'S REPRESENTATIVES

Al Purvis, Jocill Weems, George Mostyn, Helge Ødegård,
Gunnar Helle, Svein Bogre, Erling Rostad.

CONTRACTOR ROSS DRILLING COMPANY

RIG ROSS RIG

CONTRACTOR'S REPRESENTATIVES

Edvin Aahre, Ove Sæthre, Einar Møland,
Bjarne Pedersen

ANCHOR ENGINEERS

David H. Ford, John Hannan,
Einar Korsvold, Anskar Aase

WATER DEPTH	89 m
SEABED to RKB	112 m
36" HOLE DRILLED TO	175 m
30" CASING SET AT	174 m
26" HOLE DRILLED TO	585 m
20" CASING SET AT	569 m
17½" HOLE DRILLED TO	1176 m
13⅜" CASING SET AT	1159 m
12¼" HOLE DRILLED TO	2590 m
9⅝" CASING SET AT	2575 m
8½" HOLE DRILLED TO	2950 m
7" LINER SET AT	2950 m
6" HOLE DRILLED TO	-



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS A.AASE/J.HANNAN

DATE 17.09.81

Rig on move. Anchor handling.

Delivered lost circulation materials to Neptuno Nordraug.

DATE 18.09.81

Mixed + 1000 bbls spud mud. Pumped 700 bbls spud mud.

Drilling to 175 m. Wiper trip to sea bed. RIH to T.D.
Displaced to spud mud for 2nd time.

Running 30" casing.

DATE 19.09.81

Built 950 bbls gel mud.

Ran 30" casing. Cemented 30" casing.

Running the 20" riser.



ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS A.AASE/J.HANNAN

DATE 20.09.81

Ran riser. RIH with 12 1/4" bit to well head.
POOH. Waiting on weather.
25 tons Barite used for mixing kill mud to 1.23 S.G.
1 ton Bentonite used for mixing 100 bbls reserve mud.

DATE 21.09.81

RIH with 12 1/4" bit. Drilled 12 1/4" pilot hole to 465 m.
Displaced hole to seawater.
Rigged up Schlumberger.

DATE 22.09.81

Logged 12 1/4" hole. Rigged down Schlumberger.
Displaced hole to mud.
RIH with 17 1/2" bit and under-reamer.
Opened hole to 253 m. POOH. Picked up 12 1/4" bit. Drilled ahead to 550 m.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J.HANNAN/A. AASE

DATE 23.09.81

Drilled to 585 m (T.D.). Wiper trip to 235 m. RIH to T.D. Circulated bottoms up. Slugged pipe. POOH. Rigged up Schlumberger. Logged hole. POOH. RIH with 12 1/4" bit.

Displaced hole to seawater. Observed well for 30 mins. 72 units of gas. Displaced hole back to mud. POOH. Picked up 17 1/2" bit and under-reamer. Opened hole to 26" to depth of 350 m. Severe losses over shakers due to blinding of screens.

DATE 24.09.81

Under-reamed to 433 m. POOH for bit change. RIH. Drilled to T.D. 585 m. Increased mud weight to 1.25 S.G. Circulated clean. POOH. Unable to get under-reamer through wellhead. Displaced riser to seawater. RIH to T.D. Made one DP connection hand tight. POOH. Pull riser.

DATE 25.09.81

RIH with 26" bit. Reamed from 565 m. Displaced with 1100 bbls 1.25 S.G. mud. Prepared to run 20" casing.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J.HANNAN/E.KORSVOLD

DATE 26.09.81

Ran, cemented and displaced 20" casing. Built 1200 bbls new mud.

DATE 27.09.81

Working on B.O.P. stack.

DATE 28.09.81

Drilled out cement + 3 m new hole. Added seawater to the initial volume.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J.HANNAN/E.KORSVOLD/D.FORD

DATE 29.09.81

Drilling from 588 m to 956 m. Premixed gel and transferred to active all the time. Used CMC for Fluid loss control. Extremely high sand content.

DATE 30.09.81

Drilling to 1169 m. Circulated hole clean.

DATE 1.10.81

Ran 13 3/8" casing. Lost circulation during cementing. 310 bbls mud penetrated the formation.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS D.FORD/E.KORSVOLD

DATE 2.10.81

Displaced cement. Waiting on cement. Flushed kill and choke line. No return of cement. Tested seal assembly and BOP. RIH right before midnight.

DATE 3.10.81

RIH to drill out cement. Had to dump 870 bbls. highly cement-contaminated mud. Weighted up to 1.20 S.G. after leakoff test. Brought fluid loss down by adding CMC.

Mud in good shape. Seemed to work out better with less Ligno than programme called for.

DATE 4.10.81

Sticky hole. Tight spots. Max 37 tons overpull.

Picking up clay from formation continuously.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS D.FORD/E.KORSVOLD

DATE 5.10.81

Started to add 70 bbl/hr seawater. Ended up with 240 bbl/hr seawater. Fighting sticky hole. The lower clay content the better when pulling out of hole.

DATE 6.10.81

Thinned the mud while drilling. Water addition approx. 120 bbl/hr. The result was a 10 ppb decrease in MBT. Kept a satisfactory Y.P. by adding CMC HV and a few sacks of Drispac regular. Max. overpull 36 tons. High penetration rate when drilling.

DATE 7.10.81

Continued to dilute mud with seawater. Started with 70 bbl/hr, slowed down to approx. 25 bbl/hr. The claystone now being drilled is less reactive compared to the one 100 m above. Still tight spots in hole (2113-2085). Maximum overpull 40-45 tons.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS D.FORD/E.KORSVOLD/A.AASE

DATE

8.10.11

Continued diluting mud with water. Kept MBT in balance. Still tight hole. 40 tons overpull. Lower penetration rate at the moment. Expecting soon to reach the sandlayer. Will then start coring.

* 25 sxs caustic used yesterday adjusted in this report.

DATE

9.10.81

Ran water to control weight and MBT levels. Drilled into sand. Changed screens on two shakers to 80's at geologist's request because of fine sand. Trip - started swabbing on stand 18. RIH. Circulated the hole. No water added for accurate control and monitoring of volume. Hence weight rise to 1.22 S.G. 35 bbls lost over shakers on bottoms up. POOH. Hole in very good condition.

DATE

10.10.81

Cut core no. 1 and 2 from 2368 m - 2375 m.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS D.FORD/A.AASE

DATE

11.10.81

Coring from 2376 m - 2379 m. Reaming.

Cut core barrel no. 3.

DATE

12.10.81

Coring from 2395 m - 2424 m.

DATE

13.10.81

Cut core no. 5 to 2430 m.

Built 117 bbl gel.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS D.FORD/A.AASE/J.HANNAN

DATE 14.10.81

Ran water and all solids removal equipment to reduce MBT, solids and PV.

Reduced fluid loss on Statoil's request as coring in permeable formation

DATE 15.10.81

Coring no. 8 and no. 9.

DATE 16.10.81

Cut core no. 10 and no. 11 to 2510 m.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J.HANNAN/A.AASE

DATE 17.10.81

Cored to 2514 m. Tested BOP's.

Changed bottom screen on shaker no. 1 and no. 3 due to mud losses.

Changed to 40 mesh.

DATE 18.10.81

Drilled new formation to 2538 m. Changed shaker screens due to high mud losses.

DATE 19.10.81

Waiting on weather. Drilled 12 1/4" hole to 2577 m. Built some new gel and bled into the active system.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J. HANNAN/A. AASE

DATE

20.10.81

Drilled 12 1/4" hole to T.D. - 2590 m.

DATE

21.10.81

Ran Schlumberger logs.

DATE 22.10.81

Finished logging. RIH with bit. Circulated and conditioned mud, 10 stands wiper trip. RIH to T.D. Circulated hole clean and slugged pipe. POOH.

Rigged up and ran 9 5/8" casing.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J. HANNAN/E. KORSVOLD

DATE

23.10.81

Ran and cemented 9 5/8" casing. Unable to displace to float collar. Lost approx. 200 bbls. mud during displacement. Possible we have left 600' - 700' of cement in casing. POOH. Laid down landing string. Set seal assembly. Pressure tested BOP's.

DATE

24.10.81

Made up new B.H.A. Drilled cement from 2326 to 2555 m. Treated mud with CMC and Ligno in order to control fluid loss/rheology. Dumped sand traps and shakerbox. Wateraddition 3 m³/hr.

DATE

25.10.81

Drilled 2554 m - 2656 m. Leak off test 1.84 S.G. Circulated bottoms up. Low penetration rate in this chalk layer. Mud in good shape.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J. HANNAN/E. KORSVOLD

DATE 26.10.81

Drilling with bit no. 17 to 2679 m. POOH. RIH with bit no. 18. Drilling to 2686 m. Added 30 bbls seawater to keep weight in balance. Other properties steady without adding any chemicals.

DATE 27.10.81

Drilled 8 $\frac{1}{2}$ " hole from 2686 m to 2745 m. POOH. One 40 mesh screen broke on one shaker and 2 x 200 mesh screen broke on mud cleaners.

DATE 28.10.81

Made up new B.H.A. RIH. Drilled from 2745 m to 2833 m. Circulated bottoms up. Maximum 49 gas units. Diluted mud with seawater to keep weight in balance. T.D. estimated at 1860 m.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS D.FORD

DATE

29.10.81

Drilling from 2833 m to 2850 m. POOH. for logging following a wiper trip. Hole in good shape. Mud weighted up to 1.27 S.G. at Statoil's request

DATE

30.10.81

Cleaned under shakers. Logging with Schlumberger. Started drilling again at 1330 hours. Mud in good condition. Fluid loss to be reduced below 5 mls, before stop circulating at Statoil's request.

DATE

31.10.81

Drilled to 2950 m. Wiper trip. Pulled out of hole to log. Mud and hole in good condition.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS D. FORD

DATE

1.11.81

Logging.

DATE

2.11.81

Logging.

Ran in the hole and circulated bottoms up. Wiper trip. Pulled out of the hole to run the 7" liner. Ran 7" liner.

DATE

3.11.81

Ran 7" liner and cemented it. No cement contamination in the mud system. Pulled out of the hole and tested the stack. Ran in the hole with 8½" bit and casing scraper. Circulated bottoms up. No sign of cement contamination. Pulled out of the hole to change the bottom hole assembly to 6" bit and casing scraper.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS E. KORSVOLD/D. FORD/A. AASE

DATE

4.11.81

Squeezed cement around top of casing and liner overlap. Some mud lost when diluted with water on cement job when reversed circulation. Minimal cement returns. POOH. Ran in hole with 8½" bit and casing scraper. Drilled cement from 2466 m to 2485 m.

DATE

5.11.81

Ran in hole with 6" bit and casing scraper. Cleaned to bottom. Pulled out of hole. Ran in hole with C.B.L. Ran in hole to run Swab test.

DATE

6.11.81

Waiting on orders. Members of Norsk Sjømannsforbund on strike. Set cement plug 2120 m - 2000 m. Reversed out. Pulled out of hole. Ran in hole with 8½" bit.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS A. AASE

DATE 7.11.81

Tagged cement at 1991 m. Drilling soft cement to 1996 m.
Drilling firm cement to 2000 m. Circulated bottoms up.
Displaced riser with seawater. Pulled the riser.

DATE 8.11.81

Rig shut down due to strike.

DATE



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS ANSGAR AASE

DATE 23.11.81

43 BBLS lost in active pits during strike period due to leaking valves and work done on the mudcleaners.

Waiting on the weather.

DATE 24.11.81

Waiting on weather.

DATE 25.11.81

Waiting on weather. Connected riser. Displaced riser with mud.

93 BBLS mud lost due to testing kill and choke lines.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS ANSGAR AASE

DATE 26.11.81

Built some extra mud to keep volume in active. Displaced riser with seawater. Pulled the riser. Repaired it. Ran the riser. 48 BBLS mud lost due to displacing and testing.

DATE 27.11.81

Displaced riser with mud. Circulated and conditioned mud. Tested BOP. Drilled out cement from 2000 m - 2068 m.

DATE 28.11.81

Drilled out cement plug. Made up teststring.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15 '9-11

OPERATOR STATOIL

ENGINEERS ANSGAR AASE

DATE

29.11.81

Picked up tubing. Ran in hole with 6" bit and 7" - 9 5/8" scrapers - then circulated hole clean.

DATE 30.11.81

Ran Schlumberger logs.

Ran in hole with test-string.

DATE

1.12.81

Tested the well.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS ANSGAR AASE

DATE 2.12.81

Shut in well.

Pulled out.

DATE 3.12.81

Pulled out test-string. Ran in hole with 6" bit and 7" casing-scraper. Circulated and conditioned mud. Pulled out.

Treated mud to maintain good properties.

DATE 4.12.81

Set cement plugs from 2797 m - 2807 m and from 2546 m - 2430 m.

Reversed out and circulated bottoms up. POOH. Tested BOP.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J. HANNAN

DATE 5.12.81

RIH with bit and scraper. Cleaned out to 2450 m. Circulated and conditioned mud. Slugged pipe. POOH. Rigged up Schlumberger. RIH and perforated. POOH. RIH to do squeeze job.

DATE 6.12.81

Did squeeze job. Reversed out. RIH with bit and scraper. Cleaned out to 2450 m.

Reduced mud weight to 1.15 specific gravity. Slugged pipe. POOH. Rigged up Schlumberger. Ran C.B.L.

Approximately 700 BBLs water needed to reduce weight to 1.15 specific gravity.

DATE 7.12.81

POOH. Rigged down Schlumberger.

Made up test tools. RIH with same.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J. HANNAN

DATE 8.12.81

D.S.T. no. 2

DATE 9.12.81

Bullheaded string contents. Reversed out. 1151 units of gas. Circulated long way. 970 units of gas. Observed well. Slugged pipe. POOH.

DATE 10.12.81

RIH to total depth. (2450 m). Circulated bottoms up. 468 units of gas. Rigged up Schlumberger. Ran EZSV retainer, unable to get free from retainer with running tool. Schlumberger line broke at weak point. RIH with overshot and grapple, latch on to fish, POOH with same.



ANCHOR DRILLING FLUIDS AS

OSLO -- STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J. HANNAN

DATE 11.12.81

RIH with stinger. Squeezed off perforations. Reversed out. Circulated and conditioned mud. Slug pipe. POOH. RIH with bit and scraper, cleaned out top of EZSV at 2427 m. Circulated bottoms up. Slug pipe. POOH. Tested BOP.

DATE 12.12.81

D.S.T. No. 3

DATE 13.12.81

D.S.T. no. 3. Set packer. HOWCO circulating valve went into open position. Displaced string to mud by reversing. Redisplace string with 2 BBLS gel mud, 61 BBLS water and 61 BBLS diesel, open APR valve, flow well to burner, then through separator at 22:00 hrs.



ANCHOR DRILLING FLUIDS AS
OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS J.HANNAN

DATE 14.12.81

D.S.T. no. 3

Flow well through separator until 08:00 hrs.

Present operation - well shut in.

DATE 15.12.81

D.S.T. no. 3

Flow well until 08:00 hrs, closed well in for 12 hr period.
Bullhead contents of tubing, reversed out 747 units of gas.
Unseat RTTS, circulated long way 936 units of gas. Slug pipe.
POOH.

DATE 16.12.81

POOH. Laid down test string. RIH with bit and scraper.
Circulated and conditioned mud. Slug pipe. POOH. Rigged
up Schlumberger, ran gauge ring and junk basket. Ran
EZSV retainer.



ANCHOR DRILLING FLUIDS AS

OSLO — STAVANGER

DAILY SUMMARY REPORT

WELL NAME 15/9-11

OPERATOR STATOIL

ENGINEERS A.AASE

DATE 17.12.81

RIH and laid down tubing

DATE 18.12.81

Cut 9 5/8" casing at 650 m and retrieved same. Cleaned out 13 3/8" casing to 650 m with bit and casing scraper.

Set cement plug from 600 m - 700 m.

DATE 19.12.81

Punched hole in 13 3/8" casing. Cut 13 3/8" casing at 240 m and retrieved same. Displaced with seawater to 360 m.

Set cement plug from 360 m to 140 m.

SUMMARY OF EVENTS

OPERATOR: STATOIL

WELL NO. 15/9-11

36" HOLE/ 30" CASING INTERVAL

700 bbls of the mixed spudmud was circulated to ensure hole cleaning. Returns allowed to go to seabed.

During cementing 30" casing, 3 sacks Mica coarse was mixed into the cement on Dowell's cementer's order/wish.

SUMMARY OF EVENTS

OPERATOR: STATOIL

WELL NO. 15/9-11

26" HOLE/ 20"-569 mCASING INTERVAL

This section drilled with gel mud.

Built 550 bbls killmud 1.25 S.G. Due to sand increasing the mudweight, drillwater and Bentonite was added to the active system for reducing weight and ensuring good hole cleaning.

After having opened the hole with 12 1/4" bit and Schlumberger having logged it, the hole was displaced with seawater. 72 units off gas. The hole was displaced to mud and drilled with 17½" bit and 26" U.R.

Severe mudlosses over shakers due to blinding of screens. Building new mud all the time and adding lots of seawater.

After having reached TD - 585 m, the underreamer was unable to be pulled out through the well head. Displaced hole with seawater.

Pulled the riser. Displaced hole with new 1.25 S.G. mud.

Running 20" casing to 569 m.

Mud in very good condition.

SUMMARY OF EVENTS

OPERATOR: STATOIL

WELL NO. 15/9-11

17½" HOLE/ 13 3/8" CASING INTERVAL 1,159 m

Started drilling 17½" hole with Bentonite / seawater mud. The Bentonite being pre-hydrated, CMC LV was used to help control the fluid loss. Between 588 m and 956 m all mechanical equipment had to be utilized to cope with a very high sand content.

Some mud losses due to flow line plugging.

Prepared to log with Schlumberger. Ran and cemented casing and had to dump 310 bbls of mud as all available surface volume was full.

SUMMARY OF EVENTS

OPERATOR: STATOIL

WELL NO. 15/9-11

12 1/4" HOLE/ 9 5/8" CASING INTERVAL 2.575 m

R.I.H. to drill out cement. Cement had leaked back into the casing, so heavily cement contaminated mud had to be dumped. Drilling progressed well and the hole and mud remained in good condition considering the activity of the drilled clays.

All surface solids equipment including the centrifuge was run to keep the M.B.T. level below 35 ppb equivalent because at that point rheology became difficult to control. When first pulling out on each wiper trip there were tight spots, though usually the overpull was not excessive. Once each new section had been wiped and the hole remained in very good condition and did not appear to deteriorate with time. Hole remained stable through a long period of coring.

Drilling proceeded very satisfactorily with one disruption due to high winds. The pipe was hung off at 1955 m while waiting for the wind to subside.

We were able to run two shakers with 60 mesh screens and the central shaker with 80 mesh screens for the whole section to reduce solids building up in the mud. At times it was possible to run 80 mesh screens on two of the shakers. A total of 11 cores were cut and then the hole was drilled to 2590 m and logged before running casing.

SUMMARY OF EVENTS

OPERATOR: STATOIL

WELL NO. 15/9-11

8½" HOLE/ 7" CASING INTERVAL (Liner)

Hole drilled to 2.950 m.

Drilled fine cement from 2.326 to 2.575 m in casing but treatment with Sodium Bicarbonate avoided excessive increases in the alkalinity and hardness readings.

Mud stayed in good condition and stable for the section. Schlumberger logged the hole at 2.850 m, then drilling was continued to 2.950 m and the hole logged again before running the 7" liner. Ran 7" liner which went right to bottom with no difficulty.

Cemented the liner.

WELL NO. 15/9-11

36"	HOLE DRILLED TO	175	Meters Feet	30	CASING SET AT	174	Meters Feet
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ACTUAL AMOUNT OF HOLE DRILLED	63	Meters Feet	DAYS ON INTERVAL	2
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DRILLING FLUID SYSTEM	SPUD MUD-SEAWATER
1.0000	1.0000
0.9999	0.9999
0.9998	0.9998
0.9997	0.9997
0.9996	0.9996
0.9995	0.9995
0.9994	0.9994
0.9993	0.9993
0.9992	0.9992
0.9991	0.9991
0.9990	0.9990
0.9989	0.9989
0.9988	0.9988
0.9987	0.9987
0.9986	0.9986
0.9985	0.9985
0.9984	0.9984
0.9983	0.9983
0.9982	0.9982
0.9981	0.9981
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0.9910	0.9910
0.9909	0.9909
0.9908	0.9908
0.9907	0.9907
0.9906	0.9906
0.9905	0.9905
0.9904	0.9904
0.9903	0.9903
0.9902	0.9902
0.9901	0.9901
0.9900	0.9900
0.9899	0.9899
0.9898	0.9898
0.9897	0.9897
0.9896	0.9896
0.9895	0.9895
0.9894	0.9894
0.9893	0.9893
0.9892	0.9892
0.9891	0.9891
0.9890	0.9890
0.9889	0.9889
0.9888	0.9888
0.9887	0.9887
0.9886	0.9886
0.9885	0.9885
0.9884	0.9884
0.9883	0.9883
0.9882	0.9882
0.9881	0.9881
0.9880	0.9880
0.9879	0.9879
0.9878	0.9878
0.9877	0.9877
0.9876	0.9876
0.9875	0.9875
0.9874	0.9874
0.9873	0.9873
0.9872	0.9872
0.9871	0.9871
0.9870	

[illegible]

COST/DAY	US\$ 1.817,75	TOTAL COST FOR INTERVAL	US\$ 3.635,50
COST/Mt. or Yr.	US\$ 57,71	PROG. COST FOR INTERVAL	US\$ 4.824,00
ENGR. COST	US\$ 1.425,00	COST VARIANCE FOR INTERVAL	US\$ 1.188,50

OPERATOR STATOIL

WELL NO. 15/9-11

MATERIAL CONSUMPTION & COST ANALYSIS

26" HOLE DRILLED TO 585 Meters CASING SET AT 569 Meters
~~Feet~~ ~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 410 Meters DAYS ON INTERVAL 6
~~Feet~~

DRILLING FLUID SYSTEM BENTONITE/SEA WATER

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST US\$
BENTONITE	M/T	32	30	- 2	9.720,00
BENTONITE	50 kg	0	82	+ 82	1.451,40
BARITE	M/T	30	130	+100	17.420,00
CAUSTIC	25 kg	40	97	+ 57	1.843,00
SODA ASH	50 kg	12	24	+ 12	444,00

COST/DAY US\$ 5.146,40 TOTAL COST FOR INTERVAL US\$ 30.878,40

COST/Mt. or ~~Feet~~ US\$ 75,31 PROG. COST FOR INTERVAL US\$ 15.370,00

ENGR. COST US\$ 4.275,00 COST VARIANCE FOR INTERVAL US\$ 15.508,40

STATOIL

15/9-11

GEL/LIGNO/SEAWATER

US\$	4.014,25
------	----------

OPERATOR STATOIL

WELL NO. 15/9-11

MATERIAL CONSUMPTION & COST ANALYSIS

12 1/4" HOLE DRILLED TO 2590 Meters
~~Feet~~ 9 5/8" CASING SET AT 2575 Meters
~~Feet~~

ACTUAL AMOUNT OF HOLE DRILLED 1414 Meters
~~Feet~~ DAYS ON INTERVAL 22

DRILLING FLUID SYSTEM GEL/LIGNO/SEAWATER

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST US\$
BENTONITE SX	50 kg	600	148	- 452	2.619,60
BENTONITE BULK	M/T	0	4	+ 4	1.296,00
BARITE	M/T	200	150	- 50	20.100,00
SODA ASH	50 kg	10	11	+ 1	203,50
CAUSTIC	25 kg	250	267	+ 17	5.073,00
SODIUM BICARB.	50 kg	4	8	+ 4	154,00
CHROME LIGNOSULF.	25 kg	550	288	- 262	4.953,60
CMC LV	25 kg	50	328	+ 278	19.352,00
AL. STEARATE	25 kg	10	0	- 10	
DRLG. DETERGENT	200 ltr	10	8	- 2	2.800,00
DRISPAC REG.	50 lbs	15	50	+ 35	8.465,00
CMC H.V	25 kg	0	34	+ 34	2.074,00
LIGNITE	25 kg	0	41	+ 41	1.230,00

COST/DAY US\$ 3.105,49

TOTAL COST FOR INTERVAL

US\$ 68.320,70

COST/Mt. or ~~xx~~ Ft. US\$ 48,32

PROG. COST FOR INTERVAL
coring not included

US\$ 61.681,50

ENGR. COST US\$ 15.675,00

COST VARIANCE FOR INTERVAL

US\$ 6.639,20

OPERATOR STATOIL

WELL NO. 15/9-11

MATERIAL CONSUMPTION & COST ANALYSIS

8 1/2" HOLE DRILLED TO 2.950 Meters ~~xxx~~ 7" LINER CASING SET AT 2.950 Meters ~~xxx~~

ACTUAL AMOUNT OF HOLE DRILLED 675 Meters ~~xxx~~ DAYS ON INTERVAL 11

DRILLING FLUID SYSTEM GEL/LIGNO/SEAWATER

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST
BENTONITE SX	50 kg	60	24	- 36	US\$ 424,80
BENTONITE BULK	M/T				-
BARITE	M/T	15	21	+ 6	2.814,00
SODA ASH	50 kg	1	1	NIL	18,50
CAUSTIC	25 kg	25	27	+ 2	513,00
SODIUM BICARB	50 kg	NIL	19	+ 19	365,75
CHROME LIGNOSULF	25 kg	55	90	+ 35	1.548,00
CMC LV	25 kg	10	113	+ 103	6.667,00
AL. STEARATE	25 kg	1		- 1	
DRLG. DETERGENT	200 ltr				
DRISPAC REG	50 lbs	NIL	14	+ 14	2.370,20

COST/DAY US\$ 1.338,29 TOTAL COST FOR INTERVAL US\$ 14.721,25

COST/Mt. ~~xxx~~ Ft. US\$ 21,81 PROG. COST FOR INTERVAL Estimated to 2.800 m US\$ 5.181,50

ENGR. COST US\$ 6.056,25 COST VARIANCE FOR INTERVAL US\$ 9.539,75

OPERATOR STATOIL

WELL NO. 15/9-11

MATERIAL CONSUMPTION & COST ANALYSIS

TESTING AND ABANDONMENT

DAYS ON INTERVAL 33

DRILLING FLUID SYSTEM

BENTONITE/S.W./LIGNOSULPHONATE

MATERIAL	UNIT SIZE	PROG.	USED	VARIANCE ±	COST US \$
BENTONITE	50 kg		101		1787,70
BARITE	M/T		40		5360,00
LIGNOSULPHONATE	25 kg		8		137,60
DRISPAC REGULAR	50 lbs		41		6941,30
CMC LoVis	25 kg		12		708,00
CAUSTIC	25 kg		19		361,00
SODA ASH	50 kg		3		55,50
SOD. BICARBONAT	50 kg		19		365,75

COST/DAY

US \$ 476,27

TOTAL COST FOR INTERVAL

US \$ 15.716,85

COST/Mt. or Ft.

PROG. COST FOR INTERVAL

ENGR. COST

COST VARIANCE FOR INTERVAL

WELL NO. 15/9-11

TOTAL DEPTH	2.950	Meters xxx
-------------	-------	--------------------------

TOTAL HOLE DRILLED	2.950	Meters xx Feet
--------------------	-------	---------------------------------

TOTAL DAYS	47
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COST/DAY	US\$ 2.993,95
----------	---------------

TOTAL COST FOR ~~the well~~
~~XXXXXXXX~~
~~XXXXXXXX~~ US\$ 140.715,25

COST/Mt. or FX	US\$	47,70
---------------------------	------	-------

PROG. COST FOR INTERVAL ^{the well}	US\$ 114.231,75
--	-----------------

ENGR. COST	US\$ 31.706,25
------------	----------------

COST VARIANCE FOR INTERVAL	US\$	26.483,50
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ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

Drilling Fluid & Material Consumption Report

BENTONITE/LIGNOSULFONATE/SEA WATER

WELL NAME 15/9-11 AREA NORTH SEA NORWAY

OPERATOR STATOIL RIG ROSS RIG

ENGINEERS AASE/HANNAN/KORSVOLD

1981	ESTIMATED DAILY FLUID VOLUMES			BULK MATERIALS			SACK MATERIALS			LIGNO CHR. LIGNITE THINNERS			CMC LOVIS CMC HIVIS DRISPAC REG.			CAUSTIC SODA ASH SOD. BICARB.			DETERGENT MICA FINE MICA COARSE NUT PLUG F QUICK SEAL		
	LOSSES SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BAKITE	BENTONITE	BENTONITE	BENTONITE	BENTONITE	BENTONITE	LIGNO CHR. LIGNITE THINNERS	LIGNO CHR. LIGNITE THINNERS	LIGNO CHR. LIGNITE THINNERS	CMC LOVIS CMC HIVIS DRISPAC REG.	CMC LOVIS CMC HIVIS DRISPAC REG.	CMC LOVIS CMC HIVIS DRISPAC REG.	CAUSTIC SODA ASH SOD. BICARB.	CAUSTIC SODA ASH SOD. BICARB.	CAUSTIC SODA ASH SOD. BICARB.	DETERGENT MICA FINE MICA COARSE NUT PLUG F QUICK SEAL	DETERGENT MICA FINE MICA COARSE NUT PLUG F QUICK SEAL	DETERGENT MICA FINE MICA COARSE NUT PLUG F QUICK SEAL
1, 17.9																					
2, 18.9	700	950			21												26	13			
3, 19.9		950			1												6	3		3	
4, 20.9		250	25		1												2	1			
5, 21.9					5																
6, 22.9					1												11	1			
7, 23.9					2	1											19	1			
8, 24.9					53	5											36	4			
9, 25.9					30		82										8	8			
10, 26.9					40	15											17	12			
11, 27.9																					
12, 28.9		88	446		2												4	1			
13, 29.9		338	600		12									67	5		20	12			
14, 30.9		181	450		8										8		23	7			
TOTALS	700	607	3646	150	72	82				73			67	5	8		172	63		3	

ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

Drilling Fluid & Material Consumption Report

BENTONITE/LIGNOSULFONATE/SEA WATER

WELL NAME 15/9-11 AREA NORTH SEA NORWAY
 OPERATOR STATOIL RIG ROSS RIG
 ENGINEERS FORD/KORSVOLD/HANNAN/AASE

		ESTIMATED DAILY MUD VOLUMES			BULK MATERIALS		SACK MATERIALS		MATERIALS ADDED TO CONTROL PROPERTIES												
		LOST DUE SURFACE	LOST SURFACE	VOLUME MUD BUILT	EAHITE	BENTONITE	BENTONITE	LIGNO CHR.	LIGNITE	THINNERS	POLYMERS			OTHERS							
											CMC LOVIS	CMC HAVIS	DRISPAK REG.	CAUSTIC SODA	ASH SOD.	BICARB.	DETERGENT	MICA FINE	MICA COARSE	NUT PLUG F	QUICK SEAL
1981																					
15	1.10	391	180	4	2	10								5	2						
16	2.10	38											2								
17	3.10	970	600	52	4	86		10			27		3	9	8	8					
18	4.10	135	370					36			31			26			1				
19	5.10	1138	1200	7				83			57		5	43			3				
20	6.10	1509	1800	38				54			42	22	8	41			3				
21	7.10	688	700	12				26			9	12	6	25			1				
22	8.10	229	250	7				4	2		4		3	13							
23	9.10	73	40	7.5				14	12		21		2	17							
24	10.10	10	88	4				1	10		16			7							
25	11.10	65	40						3		14			6							
26	12.10	19	100	2.5				2	7		17		2	13							
27	13.10	132	180			23		10	5		11		2	6	1						
28	14.10	49	45	9				13	2		17		1	11							
TODAY'S		700	3646	150	72	82		73	0		67	5	8	172	63	0	0	110	3	100	15
TOTALS		700	6053	10859	293	78	201	320	41		333	59	42	394	74	8	8	110	3	100	15



ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

Drilling Fluid & Material Consumption Report

BENTONITE/LIGNOSULFONATE/SEA WATER

WELL NAME 15/9-11

AREA NORTH SEA NORWAY

OPERATOR

STRATOLL

RIG ROSS RIG

ENGINEERS

HANNAN/AASE/KORSVOLD

		ESTIMATED DAILY MUD VOLUMES			BULK MATERIALS		SACK MATERIALS		MATERIALS ADDED TO CONTROL PROPERTIES																				
		LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BARITE	BENTONITE	BENTONITE	LIGNO CHR.	LIGNITE	THINNERS	POLYMERS			CAUSTIC			OTHERS												
											CMC	LOVIS	CMC	HIVIS	DRISPAC	REG.	SODA	ASH	SOD.	BICARB.	DETERGENT	MICA	FINE	MICA	COARSE	NUT	PLUG F	QUICK	SEAL
1981																													
29	15.10	149	120				1				7			6			10												
30	16.10	60	30	4			2				8			5			3												
31	17.10	204	40				7				11			5			10												
32	18.10	313	50	5		24	11				14						11	1											
33	19.10	60	80			15	10				15			1			5	1											
34	20.10	26	100				10				5						3												
35	21.10	77	20	2							2						2												
36	22.10																6												
37	23.10	207																											
38	24.10	166	210			24	31				27						1	1	10										
39	25.10	110	63	4			24				32			3					6										
40	26.10	127	30																										
41	27.10	51	45				7				12						7												
42	28.10	148	300	4			6				5			6			6												
TOTAL		700	6053	10859	293	78	320	41			333	39	42				394	74	8	8	110	3	100	15					
TOTAL		907	7524	11947	312	78	429	41			471	39	67				458	77	24	8	110	3	100	15					



ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

Drilling Fluid & Material Consumption Report

WELL NAME 15/9-11 AREA NORTH SEA NORWAY

OPERATOR STATOIL RIG ROSS RIG

ENGINEERS FORD/KORSVOLD HANNAN

MATERIALS ADDED TO CONTROL PROPERTIES

ESTIMATED DAILY MUD VOLUMES										BULK MATERIALS										SACK MATERIALS										MATERIALS ADDED TO CONTROL PROPERTIES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
LOSSES SURFACE										LOSSES SURFACE										VOLUME MUD BUILT										EARITE										BENTONITE										BENTONITE										LIGNO CHR. LIGNITE										THINNERS										CMC LOVIS. CMC HIVIS DRISPAC REG.										POLYMERS										CAUSTIC SODA ASH SOD. BICARB.										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ANCHOR DRILLING FLUIDS AS

OSLO -- STAVANGER

Drilling Fluid & Material Consumption Report

NO SYSTEM BENTONITE/LIGNOSULFONATE/SEA WATER

WELL NAME 15/9-11 AREA NORTH SEA NORWAY
OPERATOR STATOIL FIG. ROSS RIG
ENGINEERS AASE

MATERIALS ADDED TO CONTROL PROPERTIES

DATE	ESTIMATED DAILY MUD VOLUMES			BULK MATERIALS		SACK MATERIALS		MATERIALS ADDED TO CONTROL PROPERTIES																
	LOSSES SUB SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BARITE	BENTONITE	BENTONITE	THINNERS		POLYMERS			OTHERS												
							LIGNO CHR.	LIGNITE	CMC LOVIS	CMC HIVIS	DRISPAC REG.	CAUSTIC SODA ASH	SOD. BICARB.	DETERGENT	MICA FINE	MICA COARSE	NUT PLUG F	QUICK SEAL						
1981																								
54, 23.11		43		NIL	USAGE																			
55, 24.11				NIL	USAGE																			
56, 25.11		93		NIL	USAGE																			
57, 26.11		48		4																				
58, 27.11		125	12										2					3						
59, 28.11		53	130	17		22	4						4				2	1	9					
60, 29.11		102	10			15							1				1	1	2					
61, 30.11				NIL	USAGE																			
62, 1.12				NIL	USAGE																			
63, 2.12		130					2						1											
64, 3.12		15	25	3								6		1										
65, 4.12		16	58	3								1						2						
66, 5.12			53	3		13	2					5		4			1	1	1					
FORWARD	907	7849	12145	325	78	264	451	41				508	39	74			471	77	29	8	110	3	100	15
ESTIMATED TOTALS	907	8474	12433	355	78	314	459	41				520	39	87			475	80	46	8	110	3	100	15



ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

Drilling Fluid & Material Consumption Report

BENTONITE/LIGNOSULFONATE/SEA WATER

WELL NAME 15/9-11

AREA NORTH SEA NORWAY

OPERATOR STAVOIL

RIG ROSS RIG

ENGINEERS AASE/HANNAN

MATERIALS ADDED TO CONTROL PROPERTIES

DATE	ESTIMATED DAILY MUD VOLUMES			BULK MATERIALS			SACK MATERIALS			THINNERS			POLYMERS			OTHERS											
	LOSSES DUE SURFACE	LOSSES SURFACE	VOLUME MUD BUILT	BARITE	BENTONITE	BENTONITE	LIGNO CHR.	LIGNITE	CMC	LOVIS	CMC	HIVIS	DRISPAC	REG.	CAUSTIC	SODA	ASH	SOD.	BICARB.	DETERGENT	MICA	FINE	MICA	COARSE	NUT	PLUG F	QUICK SEAL
1981																											
67 6.12		35	697	3		10							15		3		5										
68 7.12																											
69 8.12													2.														
70 9.12		150	20	3									3		8												
71 10.12													2														
72 11.12		130	20										3		4												
73 12.12																											
74 13.12																											
75 14.12																											
76 15.12				2								1															
77 16.12		136		2																							
78 17.12																											
79 18.12																											
80 19.12		152																									
TOTAL	907	8474	12433	355	78	314	459	41	520	39	87	475	80	46	8	110	100	15	3								
TOTALS	907	9077	13170	365	78	324	459	41	520	39	113	490	80	51	8	110	100	15	3								

14 MAY 1981



ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

Drilling Mud Properties Record

MUD SYSTEM GEL/LIGNO/SEAWATER

WELL NAME 15/9-11 AREA North Sea Norway
OPERATOR STATOIL RIG ROSS RIG
ENGINEERS FORD/KORSVOLD/AASE/HANNAN

Day No	DATE	DEPTH	MUD PROPERTIES																	OPERATION REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			DENSITY PPG SG	VISCOSITY				GELS	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis			RETORT		% SAND	BENTONITE #/BBL		POTASH #/BBL	POLYMER #/BBL	N	K																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
sec/qt	A.V. cps	P.V. cps		Y.P. #/100 sq.ft.	0	10	CG ppm						Ca. ++ ppm	Pf	% OIL	% SOLIDS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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REMARKS



ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

Drilling Mud Properties Record

MUD SYSTEM GEL/LIGNO/SEAWATER

WELL NAME 15/9-11 AREA North Sea Norway
OPERATOR STATOIL RIG ROSS RIG
ENGINEERS HANNAN/AASE/KORSVOLD

Day No	DATE	DEPTH METERS	MUD PROPERTIES																		OPERATION REMARKS													
			DENSITY PPG ☐ SG ☐			VISCOSITY				GELS		FLUID LOSS 30 Min cc's			Filtrate Analysis			RETORT				BENTONITE #/BBL			POTASH #/BBL			POLYMER #/BBL			"N"		"K"	
						sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	0	10				pH	CT ppm	Ca ++ ppm	Pf	% OIL	% SOLIDS	% SAND													
1981																																		
29	15.10	2485	1.22	46	25	18	14	14	2	9	4.9	1	12.1	10.6	21500	220	.35		12	tr	28													
30	16.10	2510	1.22	50	28	20	16	16	3	10	4.8	1	11.9	10.3	21000	280	.30		12	tr	27.5													
31	17.10	2475	1.22	45	24	17	14	14	8	8	4.9	1	11.9	10.3	21200	200	.25		10	tr	25													
32	18.10	2538	1.22	45	23	16	14	14	3	10	4.9	1	11.9	10.4	20500	220	.30		11	tr	25													
33	19.10	2576	1.22	45	23	16	14	14	3	12	5.0	1	12.1	10.2	21000	220	.25		10	tr	25													
34	20.10	2590	1.22	46	23	16	14	14	3	11	5.0	1	12.1	10.2	20500	220	.25		10	tr	24													
35	21.10	2590	1.22	49	23	16	14	14	3	12	5.0	1	12.0	10.2	20500	220	.25		10	tr	23													
36	22.10	2590	1.23	47	23	16	14	14	3	11	5.0	1	12.0	10.1	20500	160	.20		10	tr	24													
37	23.10	2590	1.23	50	27	19	16	16	3	15	5.0	1	12.1	10.0	20500	180	.20		11	tr	25													
38	24.10	2590	1.22	45	25	18	14	14	2	13	5.6	1	12.4	11.6	21100	340	2.15		10	1/4	20													
39	25.10	2652	1.22	50	30	21	18	18	2	9	4.8	1	11.8	11.8	20000	220	1.70		10	tr	25													
40	26.10	2686	1.22	48	26.5	20	13	13	4	9	5.5	1	12.6	10.8	19000	160	0.45		10	tr	25													
41	27.10	2745	1.23	45	31	24	14	14	3	13	5.4	1	13.8	11.0	20600	220	0.85		11	tr	25													
42	28.10	2833	1.23	45	28	21	14	14	3	13	5.4	1	14.0	11.2	21200	180	0.35		10	tr	22.5													

REMARKS



DRILLING FLUIDS AS

OSLO -- STAVANGER

Drilling Fluid Properties Record

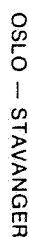
MUD SYSTEM

GEL/LIGNO/SEAWATER

WELL NAME 15/9-11 AREA NORTH SEA NORWAY
OPERATOR STATOIL RIG. ROSS RIG
ENGINEERS D.FORD/A.MSE

ENGINEERS D. FORD/A. MASE

[illegible]



ANCHOR DRILLING FLUIDS AS

Drilling Mud Properties Record

MUD SYSTEM

GEL / LIGNO / SEA WATER

WELL NAME 15/9-11

AREA NORTH SEA NORWAY

OPERATOR STATOIL

A. AASE
ENGINEERS

Day No	DATE	DEPTH FEET U METERS	MUD PROPERTIES																	OPERATION REMARKS					
			DENSITY PPG ☐ SG ☐		VISCOSITY				GELS 0 10	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis			RETORT		% SAND		BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	Z"	K"
					sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.						% OIL	% SOLIDS	% WATER									
			1981																						
54	23/11	2950	1,27	45	28,5	22	13	2 7	4,8	1	13,2	11,0	21	320	0,5		11	TIR	32,5						
55	24/11	2950	1,27	45	28,5	22	13	2 7	4,8	1	13,2	11,0	21	320	0,5		11	TIR	32,5						
56	25/11	2950	1,27	47	28,5	22	13	2 7	4,8	1	13,2	11,0	21	320	0,5		11	TIR	32,5						
57	26/11	2950	1,27	47	28,5	22	13	3 7	4,7	1	13,2	11,0	22	320	0,55		11	TIR	32,5						
58	27/11	2068	1,27	47	26,5	19	15	3 11	4,8	1	13,2	11,0	21	320	0,7		11	TIR	30,0						
59	28/11	2950	1,27	45	26,0	19	14	3 11	4,8	1	13,2	10,5	20	280	0,6		11	TIR	27,5						
60	29/11	2925	1,27	49	28,5	21	15	3 12	4,9	1	13,5	11,0	18	200	1,15		11	TIR	25,-						
61	30/11	2925	1,27	47	28,-	21	14	2 10	4,9	1	13,5	11,-	19	180	0,85		11	TIR	25,-						
62	1/12	2925	1,27	46	25,5	19	13	3 8	4,9	1	13,5	11,-	19,2	180	0,8		11	TIR	23,-						
63	2/12	2807	1,27	47	24,5	18	13	3 12	4,9	1	13,5	11,-	19	160	0,8		11	TIR	25,-						
64	3/12	2738	1,27	47	25,5	19	13	3 12	5,0	1	13,8	11,-	20	180	0,6		11	TIR	25,-						
65	4/12	2430	1,27	48	27,-	20	14	3 10	4,9	1	13,7	10,5	20,1	100	0,56		11	TIR	25,-						
66	5/12	2450	1,27	47	26,5	20	13	2 10	4,9	1	13,9	11,-	20	150	0,7		11		22,5						
67	6/12	2450	1,15	43	20,5	14	13	7 7	5,-	1	14,1	10,0	20	240	0,3		6		10,-						
REMARKS																									

ANCHOR DRILLING FLUIDS AS

OSLO - STAVANGER

Drilling Mud Properties Record

MUD SYSTEM SEA WATER / LIGNO

WELL NAME 15/9-8 AREA NORTH SEA NORWAY
 OPERATOR STATOIL RIG ROSS RIG
 ENGINEERS HANNAN

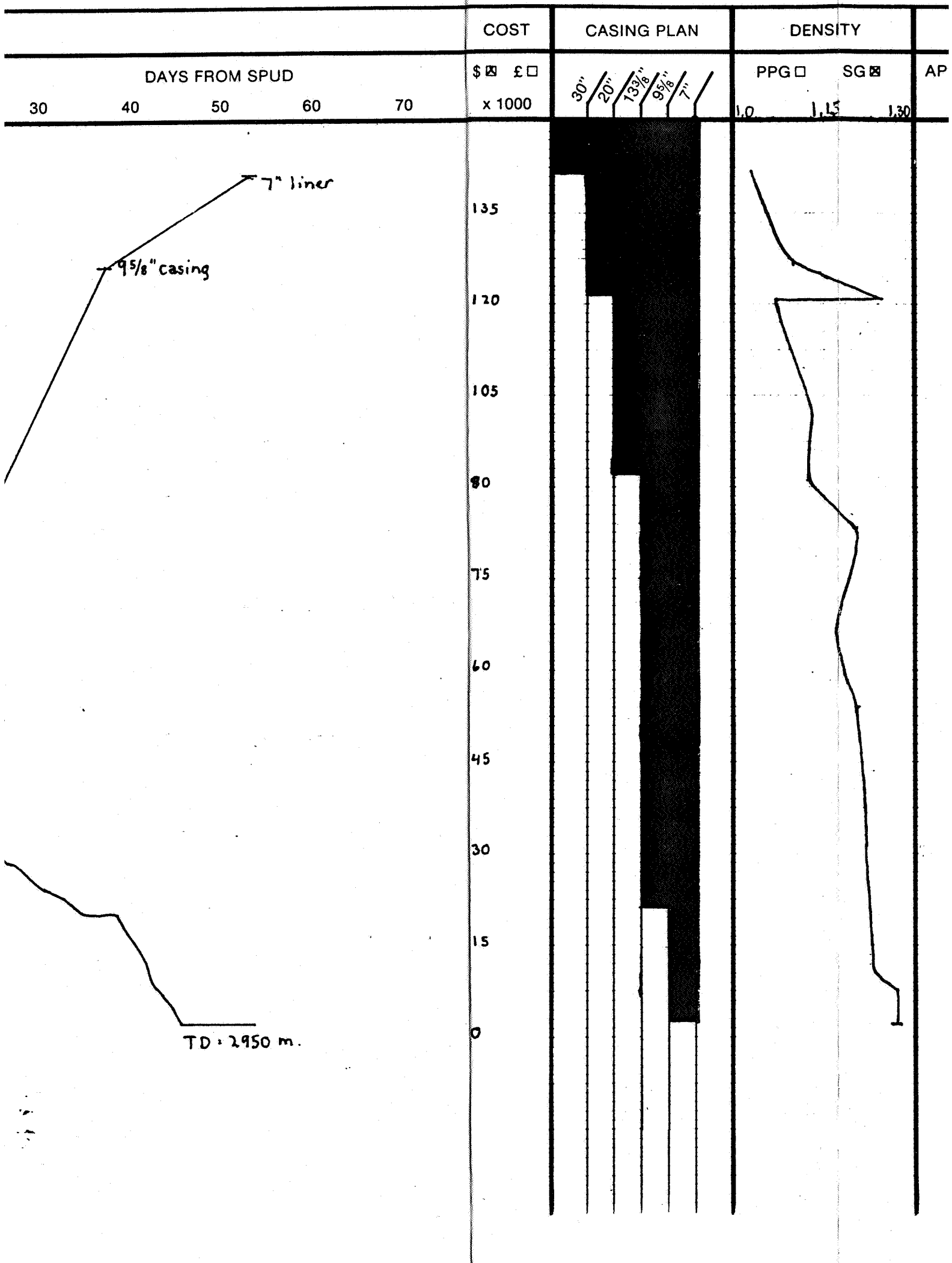
Day No	DATE	DEPTH	MUD PROPERTIES																				OPERATION REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			DENSITY PPG □ SG □				VISCOSITY				GELS	FLUID LOSS 30 Min cc's	CAKE 32 nds	H.T.H.P. cc's	pH	Filtrate Analysis			RETORT			% SAND		BENTONITE #/BBL	POTASH #/BBL	POLYMER #/BBL	Z"	K"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
			sec/qt	A.V. cps	P.V. cps	Y.P. #/100 sq.ft.	10	0	Cl ppm	Ca. ++ ppm						Pf	% OIL	% SOLIDS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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REMARKS

UIDS AS

GRAPH

OPERATOR: 15/9-1
WELL NAME: 15/9-1
CONTRACTOR: ROSS DI



IV MARINE REPORT

WEATHER AND ANCHOR TENSION 15/9-11

This well was drilled in the autumn/winter season 1981, and 85 hrs was spent WOW.

This figure does not include the 2 days WOW prior to run the BOP-stack back after it was pulled because of the strike. These two days are related to the down time caused by the strike.

There were no main wind direction in this period. The wind came from all directions except from between N and E. 5 times the wind speed was above 30 m/s, but mostly it varied between 15 - 20 m/s.

The direction of the waves showed the same pattern as for the wind.

3 days the maximum wave height exceeded 10 m, but mostly it was around 5 m.

Wave height less than 3 m was only reported 7 times.

The worst conditions occurred the 24th November -81.

Max-wind: 46 m/s

Max-wave: 18 m.

Both from the NW direction.

Maximum experienced anchor tension occurred in the same period as mentioned above. 228 tons was measured on no. 8 anchor before the rig started propulsion.

LOCATION WEATHER DATA SUMMARY



WELL: 15/9 - 11 RIG: Nordraug

TIME PERIOD: FROM 15 - 9 TO 23.12. -1981

READINGS PR. MONTH: One reading pr. month.

WIND

dir. \ m/sec.	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	> 30	total
N	1		5	1	2			9
NNE								
NE			1	1				2
ENE								
E				3	1			1
ESE				1				4
SE			3	2		1		6
SSE			2	3	1	1	1	8
S		2	4	2	3	2	1	14
SSW			1	4	1			6
SW		1	3	4	1			9
WSW								
W		2	1	2	3	2		10
WNW				3		1	2	6
NW		1	4	1	3	1	1	11
NNW		1	1	5	4	1		12
total	1	7	25	32	19	9	5	

WAVE

dir. \ height (m)	0 - 1	1 - 2	2 - 3	3 - 5	5 - 7	7 - 10	> 10	total
N		1	1	6	2			10
NNE								
NE				1	1			2
ENE								
E				2	1			3
ESE				1				1
SE				3	2			5
SSE			2	2	4	3		11
S			1	6	4	2		13
SSW				3	2	1		6
SW			1	4	2	1		8
WSW								
W		1		5	3			9
WNW				1	3	2	2	8
NW				3	4	6	1	14
NNW				1	4	3		8
total		2	5	38	32	18	3	



statoil

UND-ErH/hfl
01.10.81

NAVIGATION REPORT

TO: I. Gausland
CC: I. Johnsen, BOR
J. Haave, BOR
FROM: M. Skaar, GEO

RIG MOVE OF "ROSS RIG" TO WELL 15/9-11.

1. Final position (ED 1950)

58° 24' 02.53"N, 01° 53' 41.79"E

Accuracy: 10 meters

Rig heading: 318°

Deviation from intended position: . 21 m - 185°

2. Observed Decca Main Chain readings

Chain:	Vestlandet OE	North Scottish
Red	: B 4,3	A 18,0
Green	: H 41,9	A 31,3
Purple	: B 73,1	C 52,9

3. Navigation/positioning method.

- a) Navigation: Pulse/8 navigation system with HP computer and plotter.
Navigation contractor: Racal-Decca Survey Norge A/S
Bergen
Personnel: Lars Paul Foldnes
- b) Positioning: MX-1502 satellite positioning system.
Position contractor: A/S Geoteam, Oslo
Personnel: Dave Philips.

4. Duration of the rig move

Navigation Personnel and equipment onboard	:	16. Sept. 1981 at 20.15 hours
Start run in	:	17. Sept. 1981 at 06.30 hours
Dropped first anchor	:	17. Sept. 1981 at 07.40 hours
Dropped last anchor	:	17. Sept. 1981 at 23.00 hours
All anchors pretensioned to 350000 lbs. Ready for drilling	:	18. Sept. 1981 at 03.35 hours



5. Techniques/problems

The operation was performed according to Statoil's procedures without navigational problems.

Discreapensy between Pulse/8 position and Sat.nav. position was 28 m - 359° (Pulse/8 position north of Sat.nav. position).

M. Shaan

V PETROPHYSICAL EVALUATION

Petrophysical evaluation 15/9-11 Paleocene

The interval was logged with the following tools:

1. ISF-BHC-GR
2. FDC-CNL-GR
3. DLL-MSFL-GR
4. HDT
5. RFT

The following input parameters have been used for the petrophysical evaluation:

Interval:	2375 - 2510 m RKB
BHT, °C:	79.5°C (175°F)
Rw, ohm.m:	0.0473, from DST no. 2
ppm, NaCl:	66000, from DST no. 2
Rmf, ohm.m:	0.093
Rtsh, ohm.m:	2.20
Rhobsh, g/cc:	2.26
PHINsh, frac:	0.40
Rhoma, g/cc:	2.65
PHIN fl, frac:	1.00
M:	1.82, from cores
N:	2.2, from cores
A:	1.02, from cores
Vsh-exp:	1.6

A shaly sand method has been applied, using the Nigeria equation, for the evaluation. The R_w -value is based on ppm-NaCl measured on formation water from DST no. 2. Also the SP- curve gives a R_w close to the measured values. This is a preliminary value and could be changed when a final laboratory investigation is completed, but it will only change the statistics to a small extent. The top of the Heimdal Formation was reached at 2386 m RKB. It contained sand of good reservoir properties interbedded with thin shale beds. The gas-water contact was located at 2442 m RKB.

Statistics:

Interval:	2386 - 2506 m
Total thickness:	120 m
Net pay:	35 m
Net sand:	108 m
Av. porosity, net pay:	20.4 %
Av. shale content, net pay:	16.8 %
Av. water saturation, net pay:	22.9 %
H net pay - H gross sand ratio:	0.291
Cut-off values applied:	
Vsh > 0.40	
Ø < 0.10	
Sw > 0.60	

Petrophysical evaluation 15/9-11 Mesozoic

The zone of interest was logged with the following tools:

1. ISF-BHC-GR
2. FDC-CNL-GR
3. DLL-MSFL-GR
4. HDT
5. RFT

The following input parameters have been used for the petrophysical evaluation:

Interval:	2775 - 2850 m RKB
BHT, °C:	85.6°C
Rw, ohm.m:	0.042
Rmf, ohm.m:	0.0835
Rtsh, ohm.m:	1.80
Rhobsh, g/cc:	2.47
PHINsh, frac:	0.31
Rhoma, g/cc:	2.65
PHIN fl, frac:	1.00
M:	2.00
N:	2.00
A:	1.00
Vsh-exp:	1.60

A shaly sand method has been applied, using the Nigeria-equation, for the evaluation. The Rw-value is based on other wells drilled in the area.

Statistics:

Interval:	2789.5 - 2830 m
Total thickness:	40.5 m
Net pay:	30 m
Net sand:	32.5 m
Av. porosity, net pay:	21.2 %
Av. shale content, net pay:	5.5 %
Av. water saturation, net pay:	16.2 %
H net pay - H gross sand ratio:	0.741
Cut-off values applied:	
Vsh > 0.40	
Ø < 0.10	
Sw > 0.60	

VI RFT AND TEST SUMMARY

REPEAT FORMATION TESTER (RFT)

Two RFT runs were conducted in the Heimdal Formation, and two RFT runs were completed in Lower Mesozoic (Jurassic/Triassic). A listing of the RFT pressure points are given in table 1.

Run no. 1. Heimdal Formation:

2349.5 - 2522.0 m RKB

31 pretests records out of 35 were obtained.

One segregated sample was taken at 2387.5 m RKB.

Run no. 2. Heimdal Formation:

The purpose of run 2 was sampling, but was not successful due to slow response. Two sampling attempts at 2434.0 m RKB and 2431.5 m RKB were done.

Run no. 1. Mesozoic:

2790.5 - 2830.5 m RKB

22 pretests records out of 23 were obtained.

One segregated sample was taken at 2812.0 m RKB.

Run no. 2. Mesozoic:

2925.0 - 2938.0 m RKB

6 pretests records out of 8 were obtained.

One segregated sample was taken at 2825.8 - 2826.5 m RKB

CONCLUSION

Heimdal Formation:

No reliable gas gradient can be established from the RFT plot in Fig. 1. From fig. 2, where the RFT pressure points from well 15/9-9 and 15/9-11 are plotted, it is reasonable to assume the same gas gradient in these two wells (0.0276 bar/m, 0.122 psi/ft or 0.281 g/cc). The RFT indicates a gas/water contact at 2425 m RKB. The log analysis indicates a 100 % water saturation at 2442 m RKB and 50 - 80 % water saturation between 2425 and 2442 m RKB. The log interpretation was confirmed by DST no. 2, perforated interval 2432 - 2440 m RKB, where both gas/condensate and water were produced in large quantities. The gas/water contact is therefore picked at 2442 m RKB.

Mesozoic Formation:

A gas gradient of 0.0400 bar/m (0.177 psi/ft) or a gas density of 0.409 g/cc may be established down to the gas/water contact at 2825 m RKB. No reliable water gradient can be established out of the pretest points from 2825 m to 2831 m RKB and in the interval 2925 to 2932.5 m RKB. See Fig. 3.

Table 1: RFT pressure points 15/9-11

<u>Depth, m RKB</u>	<u>Pressure, kPa - g/cc</u>	<u>Run no.</u>	<u>Comments</u>
2349.5	24152.3 - 1.049	1	
2351.0	24662.5 - 1.070	1	Supercharge
2361.0	24193.7 - 1.045	1	
2387.5	24276.4 - 1.037	1	
2388.5	24338.5 - 1.039	1	
2388.5	24366.0 - 1.040	1	
2388.5	24269.5 - 1.036	1	
2388.5	24276.4 - 1.037	1	
2395.0	24283.3 - 1.034	1	
2401.0	24324.7 - 1.033	1	
2405.0	24393.6 - 1.035	1	Supercharge
2410.0	24359.1 - 1.031	1	
2416.0	24455.7 - 1.032	1	
2423.0	24448.8 - 1.029	1	
2431.0	24662.5 - 1.027	1	
2431.5	24359.2 - 1.022	2	
2432.0	24407.4 - 1.024	1	
2434.0	24424.3 - 1.023	1	
2434.0	24393.7 - 1.022	2	
2435.0	24386.7 - 1.021	1	
2436.0	24428.1 - 1.023	1	
2436.5	24490.1 - 1.025	1	
2436.5	24386.7 - 1.021	1	
2437.0	24421.2 - 1.022	1	
2439.0	24483.3 - 1.024	1	
2444.0	24566.0 - 1.025	1	
2446.0	24572.9 - 1.025	1	
2469.5	24786.6 - 1.024	1	
2475.5	24800.4 - 1.022	1	
2483.0	24896.9 - 1.023	1	
2488.5	24986.6 - 1.024	1	
2495.3	24044.4 - 1.024	1	
2500.0	25096.6 - 1.024	1	
2517.0	25214.1 - 1.022	1	
2790.8	29985.3 - 1.096	3	
2791.0	29895.7 - 1.090	3	
2796.0	29937.0 - 1.094	3	
2798.0	29902.5 - 1.090	3	

Table 1 continued.

<u>Depth, m RKB</u>	<u>Pressure, kPa - g/cc</u>	<u>Run no.</u>	<u>Comments</u>
2801.0	29916.3 - 1.089	3	
2804.0	29916.3 - 1.089	3	
2806.0	29930.1 - 1.088	3	
2809.0	29937.0 - 1.087	3	
2812.0	29943.9 - 1.086	3	
2816.0	29964.6 - 1.085	3	
2820.0	29985.3 - 1.085	3	
2823.0	30006.0 - 1.084	3	
2825.8	29985.3 - 1.082	4	
2826.0	30026.7 - 1.084	3	
2826.0	30012.9 - 1.083	4	
2826.5	30047.4 - 1.084	4	
2827.0	30040.5 - 1.084	3	
2828.0	30068.0 - 1.085	3	
2829.0	30102.5 - 1.085	3	
2830.0	30102.5 - 1.085	3	
2830.5	30109.4 - 1.085	3	
2927.5	31398.7 - 1.094	4	
2929.0	31405.6 - 1.093	4	
2932.5	31433.2 - 1.093	4	
2934.0	31426.3 - 1.092	4	
2936.0	31481.4 - 1.093	4	
2938.0	31474.5 - 1.093	4	

Fig.1

15/9-11 FORMATION PRESSURE HEIMDAL FM

DEPTH
m RKB

2350

2400

2450

2500

2550

• RFT

★ DST No. 2
(PRESSURE AT GAUGE
DEPTH)

WATER GRADIENT: 0.0941 bar/m
0.960 g/cc
0.416 psi/ft

242.5

245

247.5

250

252.5 bar

3500

3520

3540

3560

3580

3600

3620

3640

3660

psig

PRESSURE

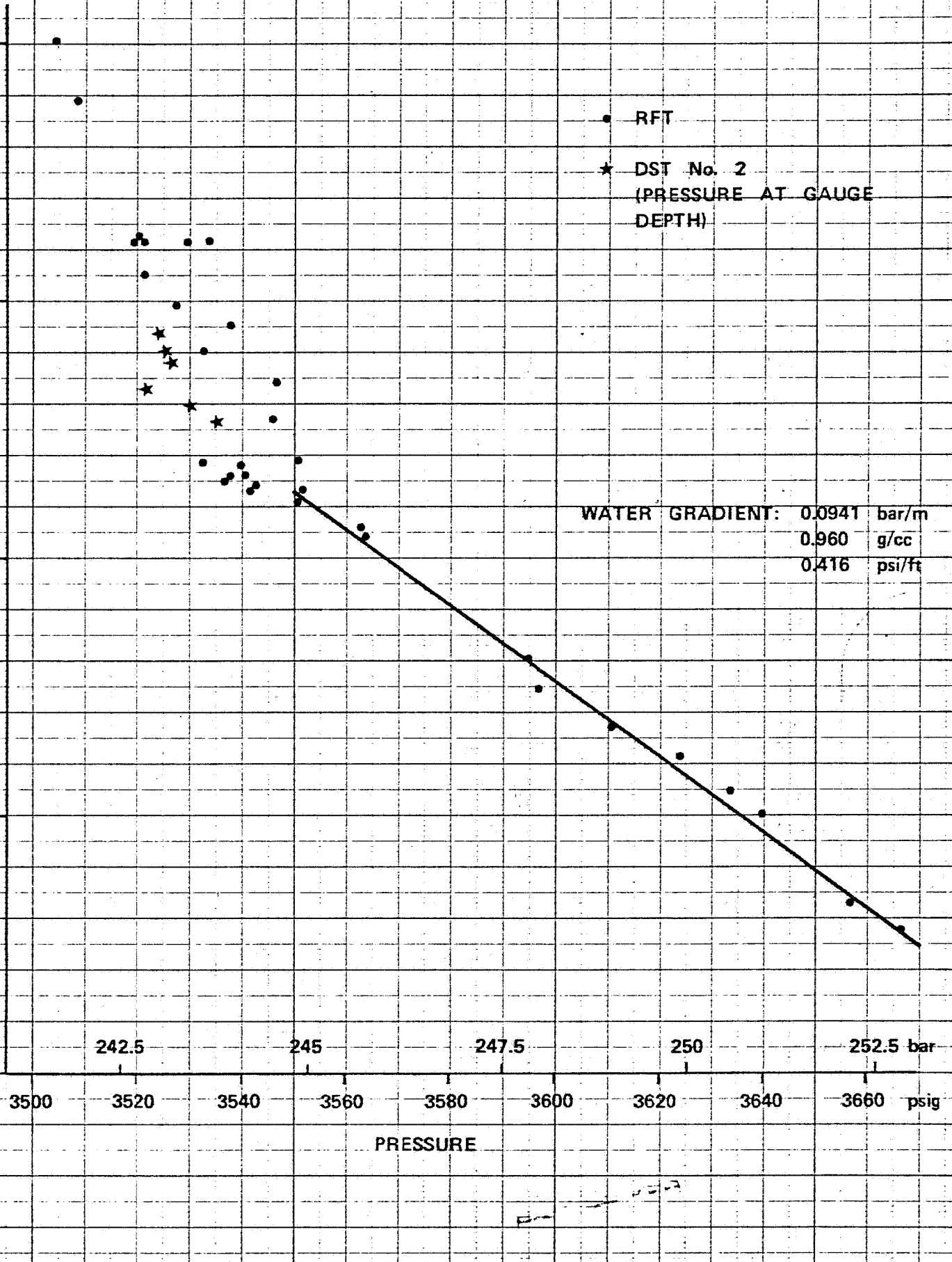


Fig. 2.

FORMATION PRESSURE COMPARISON 15/9-9 AND 15/9-11, HEIMDAL FM

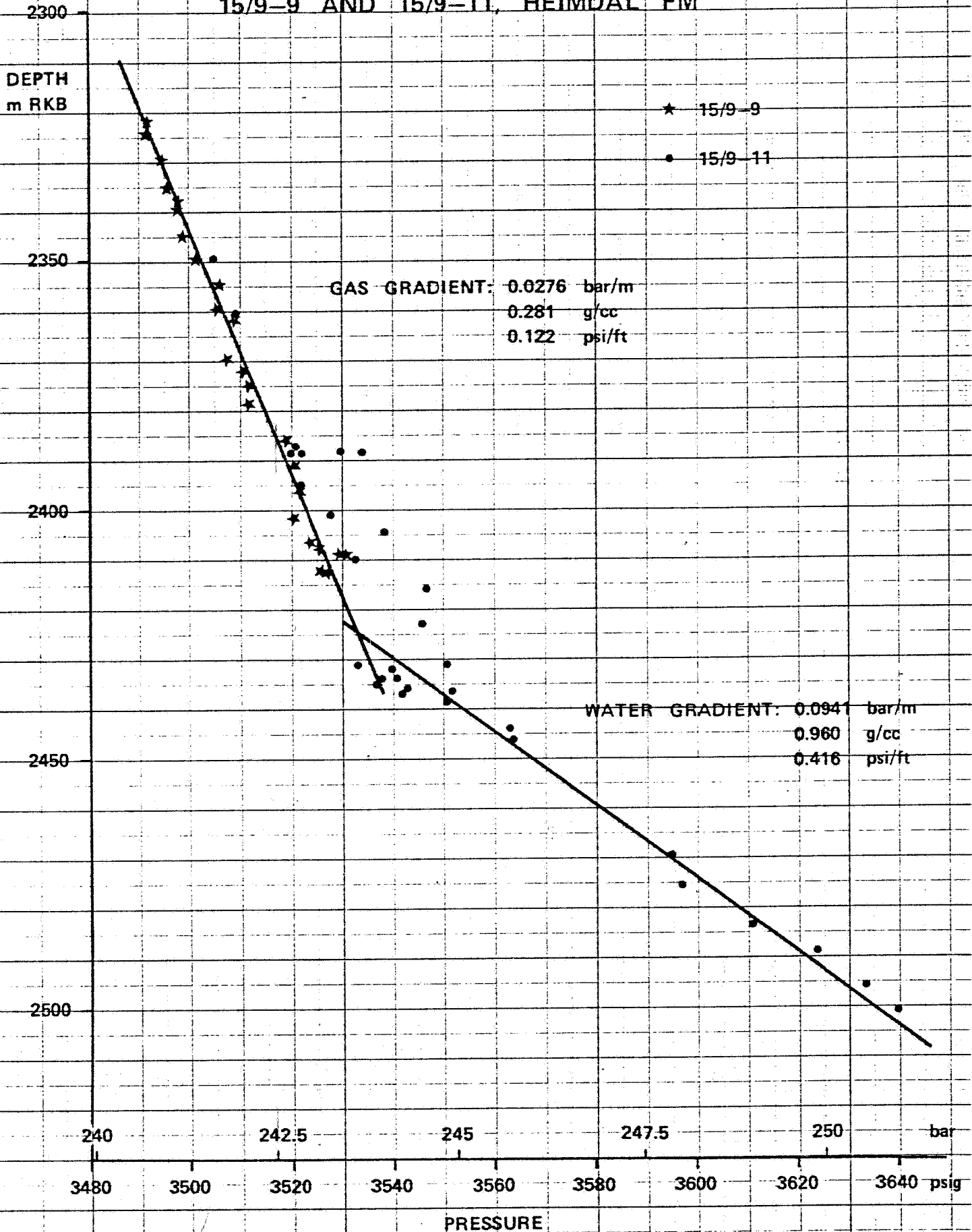


Fig. 3.

15/9-11 FORMATION PRESSURE
JURASSIC / TRIASSIC FM

DEPTH
m RKB

2800

2850

2900

2950

4300

300

4400

305

PRESSURE

310

4500

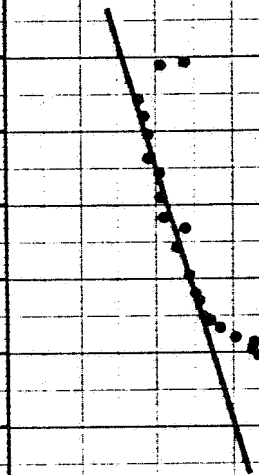
315

4600 psig

bar

GAS GRADIENT: 0.0401 bar/m
0.409 g/cc
0.177 psi/ft

GAS / WATER CONTACT: 2825 mRKB



Testing 15/9-11

Three DST-tests were carried out in this well, one in the Mesozoic sandstone and two in the Heimdal sandstone formation. Results of the tests are presented in the attached tables.

DST no. 1

The objective of this test, perforated from 2797 - 2807 m RKB, was to obtain fluid samples and investigate reservoir properties of the hydrocarbon bearing Mesozoic sandstone. No sand was produced and CO_2 was 0.5 - 1.0%, H_2S negative. The well was flowed on 42/64" choke for a longer period producing gas and condensate with no water. Three sets of PVT-samples were taken at the separator.

DST no. 2

The objective of test no. 2, perforated at 2430 - 2442 m RKB, was to obtain fluid samples, to test the potential gas/water contact, investigate reservoir properties, test for possible water-cut (water saturation from logs up to 80%) and to check for sand production. After a long flow period on 32/64" choke the test had to be aborted due to leakage in the heater gas outlet. One good set of PVT samples was taken at the separator.

The well produced gas, condensate and water (680 BPD), and good samples of formation water were obtained. The well was opened on a 1" choke and sand was produced. This was reduced by choking back to 28/64" after a clean-up period. To be able to produce water a final flow on 32/64" choke was necessary. No H_2S was produced and the CO_2 -content in the gas was 0.1 - 0.5%.

DST no. 3

The objective of test no. 3, perforated from 2395 - 2415 m RKB, was to obtain fluid samples, investigate reservoir properties and check for sand production in the main pay section of the Heimdal formation. The test was mechanically successful, opened up on 48/64" choke for a longer period, then shut-in for a longer period and then a multirate flow on three chokes with increasing sizes. The well was then shut-in for a final build-up. The well produced gas and condensate and PVT-samples were taken at the separator in both flow periods. No H_2S was produced and the CO_2 -content was 0.7%. The BS+W was 0.8% and there was no sand produced.

DST NO 1-15/9-11

Interval Stratigraphy Unit	2789,5-2830 m RKB Mesozoic ---	
PETROPHYSICAL EVALUATION Net Pay Av. Vsh Av. Ø Av. Sw	30m 5,5% 21,2% 16,2%	
PERFORATED INTERVAL	2797-2807 m RKB	
FLOW DATA Choke size (mm) Gas Rate ($10^3 \text{ SM}^3/\text{D}$) Cond. Rate (SM^3/D) BHFP (Bars)	16.67 (42/64") 571 238 283.31	
BUILD UP ANALYSIS P* (Bars) kh ($\mu\text{m}^2\text{m}$) k (μm^2) S	Horner 299.48 16.008 (53266 md-ft) 0.534 (541 md) 147	
REMARKS		

DST NO 2 - 15/9-11

Interval Stratigraphy Unit	2430 - 2442 m RKB Heimdal -----
PETROPHYSICAL EVALUATION Net Pay Av. Vsh Av. Ø Av. Sw	-- 0,067 fractions 0,244 " " 0.801 " "
PERFORATED INTERVAL	2432-2440 m RKB
FLOW DATA Choke size (mm) Gas Rate ($10^3 \text{ SM}^3/\text{D}$) Cond. Rate (SM^3/D) BHFP (Bars)	12.70 (32/64") $233.785 \cdot 10^3 \text{ m}^3/\text{D}$ $104 \text{ m}^3/\text{D}$ 236.814
'BUILD UP ANALYSIS P* (Bars) kh ($\mu\text{m}^2\text{m}$) k (μm^2) S	Horner 244.213 --- --- 55
REMARKS Two-phase flow $q_w = 680 \text{ BPD} = 108 \text{ M}^3/\text{D}$ $K_w = 555 \text{ md} \rightarrow \frac{k}{(\mu)} w = 1500 \frac{\text{md}}{\text{cp}}$ $k_g = 425 \text{ md} \rightarrow \frac{k}{(\mu)} g = 14638 \frac{\text{md}}{\text{cp}}$ $h_f = 12\text{m} = 39.37 \text{ ft}$	

DST NO 3 -15/9-11

Interval Stratigraphy Unit	2386 - 2442 m RKB Heimdal ---	
PETROPHYSICAL EVALUATION		
Net Pay	40m	
Av. Vsh	16,4%	
Av. Ø	20,0%	
Av. Sw	23,0%	
PERFORATED INTERVAL	2395-2415 m RKB	
FLOW DATA	FIRST FLOW	MULTIPLE FLOW (last rate)
Choke size (mm)	19,05 (48/64")	31,75 (80/64")
Gas Rate ($10^3 \text{ SM}^3/\text{D}$)	570,867	890,848
Cond. Rate (SM^3/D)	265,67	434,67
BHFP (Bars)	236,835	234,077
BUILD UP ANALYSIS	HORNER	MULTIRATE
P* (Bars)	242,847	242,88
kh ($\mu\text{m}^2\text{m}$)	15,564	.16.05
k (μm^2)	0.410 (415 md)	0.422 (428 md)
S	57	54
REMARKS		